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# Electrical Contracting

*With Which Is Consolidated*  
**The Electragist and Electrical Record**

## GENERAL CABLE INSULATED Wires and Cables

for Alterations and Construction  
under the

### NATIONAL HOUSING ACT



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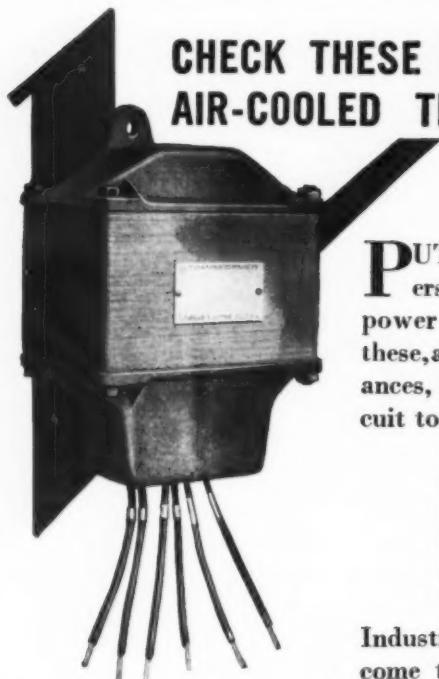
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**L**ET us tell you more about G-E time switches and transformers. Simply mail the attached coupon, or address the nearest G-E sales office, the G-E Supply Corporation, or the Graybar Electric Company, Incorporated.

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Time Switches ☐

Air-cooled Transformers ☐

Please send me descriptive and application data on the products I have checked above.

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Firm.....

Street.....

City..... State.....

320-42



VOLUME 33  
NUMBER 12

# electrical contracting

WITH WHICH IS CONSOLIDATED ELECTRICAL RECORD

S. B. WILLIAMS, EDITOR AND GENERAL MANAGER

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## NATIONAL HOUSING ACT

*Build up your Profits NOW with RCA VICTOR sound!*

*Now you can sell your customers the RCA Victor Sound Systems they have wanted.*

**R**IGHT now is the moment both they and you have been waiting for. The Federal Government with FHA is making possible easy borrowing for property improvements. Right now, then, is the psychological instant to get in on the profits of this apparent need. The Finance Plan of the Federal Housing Administration is going to mean real business for the Electrical Contractor by making it possible to close those long-delayed orders for RCA Victor Sound Equipment.

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- ☐ Centralized Radio
- ☐ Sound Reinforcing
- ☐ Simplified Antenna Systems
- ☐ Public Address



# No Demand

IN preparing this issue a staff member visited several cities taking pictures of existing wiring conditions. While we have been able to use only a fraction of the pictures taken, it soon became evident that there is an appalling amount of electrical work to be done. Obsolete, hazardous, defective, broken, improperly installed wiring abounds apparently in every city. This is the time to go after it.

THE real problem is how to tackle the job so as to release this work in a manner that will make it profitable to handle. Much of it, particularly the residential, is small and, due to the amount of lost time and cold-turkey selling expense, it is not profitable at the present time.

The aggregate of this work, however, is so large that it seems as though some coordinated national effort by those who will benefit by this work other than the contractor might be undertaken. In other words, there is a very definite expense to selling the public and the manufacturer, wholesaler and utility should bear their share.

To state the problem simply, the market exists but there is no demand. The first job is to arouse this demand and that requires intensive sales promotional effort. The contractor should bear the expense of selling only after the demand has been created by sales promotion.

Individual manufacturers are doing some of this sales promotional work but the real job is that of cooperative effort where enough money and talent is available to develop a buying urge. This market is not one of millions, but billions. Is that not worth spending real money to develop?

Let any manufacturer compare his present wiring device or power equipment line with that of only a few years back. Are the older devices out-of-date?

*Electrical Contracting, October, 1934*

Is there any good logical reason why they should be replaced with modern equipment? And then think of how little wiring so far has been replaced. Is it not possible to get some kind of a picture of the possibilities?

The problem, of course, has both a national and a local aspect. Those companies that do a national business such as the manufacturers should be charged with the responsibility of doing the national promotion. Those interests such as utilities and wholesalers should do the local promotional work. The job of the contractors is to follow up the promotional work with personal selling efforts.

It would seem, therefore, that some national directing and coordinating agency was essential. If the manufacturers are to get any real benefit out of their national appropriation it will only be because of a simultaneous local activity. Who is there now to stimulate, and help and encourage such local activities?

THIS remodeling activity, stimulated at this time by the F.H.A. campaign, is, of course, only one phase of the necessary promotional work to be done on wiring. By November 1 F.H.A. expects the new house financing program to be ready. If this plan stimulates construction as expected there will be from five to ten times as many houses built in 1935 as were built in 1934.

Are these houses to have adequate wiring or are they to be just wired?


The electrical industry has a lot at stake in the wiring market right now. If the industry does not get its share or more of the remodeling dollar, and later the new house dollar, it will be because the industry has not seen fit to spend the necessary money.

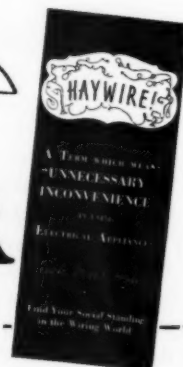
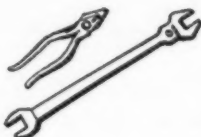
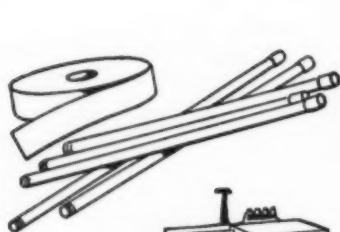
This is not the electrical contractor's sole sales responsibility.

# \$500,000,000

## FOR REMODELING AND REPAIRS IN 1934 ... \$1,500,000,000 BY JANUARY 1, 1936



The Government expects more than \$500,000,000 will be loaned this year for repairs and remodeling under the National Housing Act. \$1,500,000,000 is expected to be loaned by January 1, 1936. ¶ How much of this business will go to the electrical contractor? . . . The answer depends entirely on how aggressively the contractor goes after this opportunity. ¶ Remodeling will be given wide publicity. Government support is making the funds available. But it is up to the electrical contractor to *sell* specific electrical remodeling jobs. Sell the *conveniences* and the *safety* of more up-to-date wiring installations. ¶ To help you with your selling job, Graybar has prepared an unusually interesting booklet, "Haywire." In simple language, it explains to prospective customers some of the mysteries of home wiring—and why one should have *better* wiring. Ask us about it. Write us now . . . or mail the coupon below. 



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VOLUME 33  
NUMBER 12

# electrical contracting

WITH WHICH IS CONSOLIDATED ELECTRICAL RECORD

OCTOBER  
1934

## *the house that was never finished*

A certain old lady was left alone in the world, with a 10 room house on a sizable country estate, and plenty of cash. She gave freely to charity, but still was lonely, as she had never learned to be a mixer. She needed some kind of a hobby to make her happy, and she got it through a remodeling job on her house.

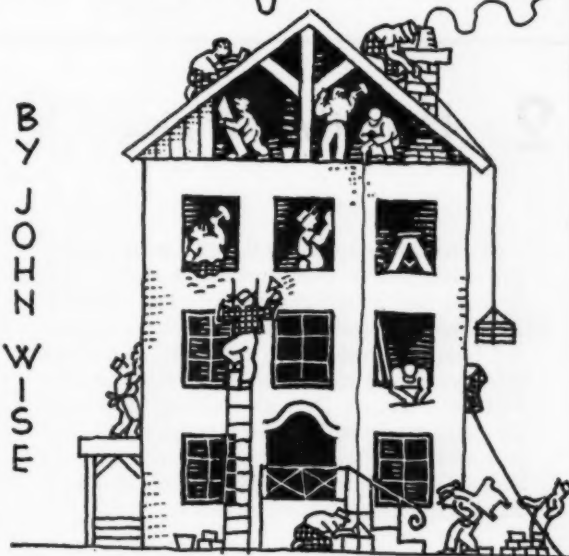
Some wise contractor sold her the idea of a big porch and conservatory. She got the building fever from watching the work, and from then on she was never lonely, because her place was continually cluttered up with workmen, tools and material. As fast as one addition was finished, she called for another room or wing, and this went on till the old house boasted over 50 rooms and covered several acres of ground.

They wrote her up in the Sunday papers, comparing her to the "Chambered Nautilus," the shell fish which builds one chamber after another and occupies them in turn, because she lived for a while in every part of the house, moving into each addition as it was completed. Most people said she was crazy, but not the boys who did the work—they thought of her as I do, a swell old gal who helped the world go around. She was particular, but she laid her dough on the line and appreciated good work.

When she started her hobby, she thought tuck-pointing was some kind of sewing, but in a few months had learned the game so well it was a pleasure to figure with her. She created business for miles around; her neighbors couldn't duplicate her activities, but they caught the disease and there was enough remodeling that the boys all got fat and built homes of their own. And (get this one) when she finally stretched out to die, she insisted the work shouldn't stop; just passed on with a smile on her face and the sweet music of saws and



BY  
JOHN  
WISE



hammers ringing in her dear old ears.

Now, we can't go out and find eccentric ladies adding 40 rooms today, but I know that, deep in his heart, every home owner and every good landlord is proud of his property and wants to make improvements—no house is ever really finished. Remodeling is normally one of the best markets the artisans enjoy, and right now there is more of it needed than ever before. Whether it is bought by those who have the cash or those taking advantage of the new loan proposition, every job placed is a step toward recovery.

But the burning question is: "How much of this remodeling will be electrical?" We know that our industry should get a goodly share; we also know that, unless the public is forcefully reminded of the importance of wiring, the lion's share will go to other trades.

This is cold turkey, and the answer is that every local association should advertise, and every electrical contractor should go to the householders in his neighborhood with a strong sales story in behalf of his work. It is the one and only way to get a decent share of this business.



## **1 Adequate Wiring**

While no accurate statistics are available it is safe to say that less than 10 percent of the homes are adequately wired taking the Industry House Wiring Adequacy Standards as a basis for comparison. One survey indicated that in 60 percent of the homes no additional wiring had been done since the original installation. In many places there is a condition of overfusing due to overloaded circuits. Larger services and additional circuits are badly needed in all of the older homes as well as additional outlets and switches.

## **2 Defective Wiring**

Six out of every ten buildings contain defective wiring, the correction of which on the average will cost \$59.00. Wear and tear, obsolescence, and particularly extensions by untrained and incapable people have raised the amount of defective wiring that should be replaced to over a billion dollars. Defective wiring is causing the number of electrical fires to increase. Experience has shown that reinspection on the basis of selling correction rather than forcing it will bring a large volume of work.

## **3 Obsolescence**

In an industry which progresses as fast as the electrical, obsolescence must be large. Old fashioned switches, receptacles, control, light units, etc., are not only out-of-date, but are apt to be inefficient, clumsy and liable to break down at any minute. While the matter of efficiency might not enter the home, appearance does. In all homes wired prior to about 1917, and many since then, will be found the old-fashioned safety switchless service entrance and in many places will still be found old link fuse panels.

## **4 Hazardous**

In less than 3 percent of the filling stations recently inspected in a good-sized middle western city was the wiring in accordance with the National Electrical Code. Hazardous location wiring rules were put in the Code because of explosions in places where there were explosive gas mixtures, or dusty or linty air. Explosion-proof wiring devices and lighting and control equipment are now available. The most numerous places needing this equipment are gasoline stations, dry-cleaning establishments, paint spray booths.

**10  
Ways**

## **5 Repairs**

There is probably not a wired building that does not need some kind of electrical repairs. Plates get broken or loosened, fixtures become wobbly, lamps are grounded, switches broken, etc. Since most of the remodeling work while encouraged by F.H.A. is nevertheless for cash, this repair work offers an opportunity. Incidentally, it has been the experience of those doing this kind of work that it offers the opportunity of doing additional electrical work at the same time.

## 6 Electric Kitchen

Under the Act financing is not permitted for portable equipment. The same equipment, such as range and refrigerator, can be financed if built in. A large insurance company is remodeling the defaulted homes that it has had to take over and has remodeled the kitchens to electric kitchens—it helps to sell the house at a higher figure. One or two electric kitchens in a block will help to sell others. These would be hard to sell in old homes without financing aid.

## 8 Lighting

The Better Light—Better Sight Campaign this fall will go much farther than last year. Committees are being organized everywhere to take the thought of eye conservation to the public. Relighting where it is fixed can be financed the F.H.A. way. Built-in lighting is becoming very popular, especially in stores. Each installation makes the next easier to sell. Modernized store fronts, filling stations and theatre entrances with luminous architecture offer a growing market. Home refixturing represents a market virtually untouched.

**in which the  
electrical industry  
can employ  
F.H.A. financing**

## 9 Foreclosed Houses

Insurance companies, banks and others have had to take over thousands of homes on which the mortgage has foreclosed. At the present market a large percentage of them would not bring enough to cover the loan. New fixtures, modern wiring and a modern kitchen would make them more readily salable. Such remodeling would virtually force all others trying to sell or rent homes to modernize their places in a similar manner. All "For Rent" or "For Sale" houses represent a repair and remodeling market.

## 7 Heating

With the coming of colder weather there are many places where electric heat can be used. In the home an auxiliary heater for bathrooms and nurseries; in the factory to heat out-of-the-way places that are difficult to reach with steam or to keep valves open; in numerous places such as shanties, gatekeeper booths. In many cases these will displace smelly oil heaters that vitiate the air and make it unfit for humans to breathe.

## 10 Remetering

In hospitals, institutions, factories and all places with multiple metering, a study might reveal an opportunity to save the customer money either through consolidated metering or change over to a different form of service such as high voltage. Factories especially in this connection offer an opportunity for small air-cooled transformer installations so that high priced energy for lighting and small tools can be taken off lower rate power circuits.

# 14 Suggestions for

Although the financing through F.H.A. is now available electrical modernization of homes and commercial structures must be sold and the selling will be in competition with the plumber, painter, roofer, carpenter, etc. In these other industries the whole burden of selling is not being placed upon the contractor. Each of

**1. Home Surveys:** Through the cooperation of the power company a survey ought to be made of the wiring in all homes. Those that are greatly under-circuited, or have inadequate switching and outlet facilities, or have an old hazardous service, probably too small, or have ancient fixtures, are prospects for modernization. The names should be circularized before calls. Every name should be called on preferably at night because the woman of the house is too accustomed to shooing salesmen away in the daytime. When people are not at home leave card and call the man of the house the next night on the telephone. Have definite recommendations to make and prices.

Under the F.H.A. plan a householder can finance a number of repairs with a single loan so that if the electrical work does not come to \$100.00 (the minimum amount) other repair things can be suggested to bring up the total.

**2. Model Electrical Modernized Home:** One of the best methods the industry had to interest the public in electricity was the showing of model electrical homes. The same thing can be accomplished by modernizing an old home electrically. In many cities a newspaper or the local F.H.A. committee is dramatizing this work by modernizing an old home. In many instances these can be made electrical homes.

Some contractors have made their own residences model electrical homes so that customers could see what things looked like and what they actually did in a home. In such cases the contractor should be sure to have all of the many wiring accessories that are purely comfort giving. They are more easily sold when shown in actual use. A contractor's own home also provides the opportunity for selling built-in electrical conveniences — heaters, ventilators, electric kitchens, bell and signal systems, lighting, etc.

**3. Reinspection:** The F.H.A. financing is not limited to homes but applies equally well to stores, factories, commercial buildings, apartments, filling stations, etc. Much of the difficulty with reinspection has been the lack of financing. This can now be easily handled, especially as most corrections are small in cost. While there will be examples of corrections running into the thousands, most of them will come under \$1,000.00. This work can be sold now by show-

ing that it will never again cost so little while it is work that the longer it is put off the worse it will become and the more it will cost. It might be well, with the cooperation of the inspection department, to develop news for the papers showing the dangers of uninspected wiring and the need for periodic reinspection. Inspectors should be encouraged to exhibit examples of defective wiring. The Illinois Chapter of Inspectors has outlined a method for making home reinspections. The public is essentially interested in safe living and working quarters.

**4. Light Up Your Stores Brilliantly:** Store lighting can be financed the F.H.A. way and since the local industry in virtually every city is going to get behind the "Better Light—Better Sight" campaign this fall the public should be in a light-buying frame of mind. Every contractor should light his store to a very high intensity, and then send out cards inviting his storekeeper neighbors to visit his shop on a certain night. Show them by actual example what can be done at a very moderate expense. Offer to make a trial installation. After being in your store for awhile get them to go back to their own places so as to arouse a feeling of dissatisfaction with their present lighting. Follow them up with calls and letters.

**5. List of Old Customers:** One of the most productive sources of modernization and repair work is your list of old customers. Go back to everybody you ever did any work for and try to sell them additional wiring. The job may have been fine when done originally but the demands upon it have increased and are going to increase still more. Repairs are bound to come up. Everything else about a house needs repairing, why not the wiring? Plates get broken, switches wear out, sockets get loose, lamps get grounded, bells become temperamental, etc. While you are making all of these miscellaneous repairs suggest new outlets or switches, etc. One contractor in a small town recently sold two out of every three old customers called on. The jobs ran between \$18.00 and \$30.00 each.

It is well when doing this kind of selling to go equipped to do the work then and there. Take the truck along with a stock of all of the commonly needed items for repairs or small installations.



# Selling Modernization

these industries realizes that unless the contractor is helped with sales promotion much of the benefit of the Act will be lost. The electrical industry must act likewise. The public needs to be sold from every angle by every electrical interest if the electrical industry is to benefit greatly.—Editor.

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**6. Window Displays:** In your own windows, or those of your banks or some friendly real-estate agent, or some vacant store property, show samples of obsolete wiring devices and alongside show the modern device. Have attractive descriptive show-cards lettered. People like to window-shop and if they see something interesting they will stop. These windows might also show some examples of defective wiring and carry a word of caution. People might be asked to have a free inspection made of their homes or premises.

**7. Cooperative Advertising:** A number of contractors by pooling their advertising appropriation can make a greater display and therefore get more attention. The advertisements should be carefully prepared by an expert and each piece of copy should be designed to sell something. One of the best copy appeals is to make the prospect dissatisfied with something in his own home or place of business, such as a dark basement, or tripping over a cord, etc. The cooperating advertisers will, of course, all sign the advertisements and they should agree on some common selling plan, such as free inspection.

**8. Cooperation With Other Kinds of Contractors:** Some electrical contractors have been successful in hooking up with certain other kinds of contractors. Thus, one contractor had a sales alliance with a painter, another with a plumber and one with a heating and ventilating contractor. The value of such an alliance is that you have twice as many prospective repair customers and in the present instance the work of both contractors can be lumped for the financing. Where such sales relationships occur, each contractor serves as a job feeder for the other. No obligations are incurred.

**9. Free Inspections:** Merely to offer free inspection has not been very satisfactory because the customer "smells a rat." However, one can be offered with the purchase of every carton of fuses. There must be some kind of trouble or the customer wouldn't be buying fuses. Offer to find out what it is without charge. This will give a contractor the finest opportunity he could want to do a selling job.

**10. Revive Electrical League:** At one time there was a large number of electrical leagues promoting

principally better wiring. Most of the leagues have either been abandoned or have become very inactive. These leagues should be revived or new ones formed with a manager. This modernization market affords an opportunity for so many trades that the electrical industry will not secure a fair share of the business unless it is organized to do a promotional job.

The public understands the need for a new coat of paint. It understands that plumbing fixtures wear out, crack and become obsolete, it understands that roofs leak, etc., but it has never thought any about repairing or remodeling its electrical system because the electrical industry has never gotten around to doing a promotional job of that sort. The league can do that kind of work and it is to the advantage of the entire industry that such a promotional job be done. The selling of this market cannot, in all fairness, be left entirely to the contractor.

**11. Lists of Prospects:** From the telephone book, or the city directory, you can secure the names of all property holders in your area. Have a letter prepared by some competent letter shop and send out fifty or a hundred a day just to get inquiries. Follow up each inquiry the day it is received.

**12. Make Yourself Known:** It is a long time since most architects were soliciting bids. Their lists of contractors are probably not up to date. Make it a point to get on the contractor list of every architect. At the same time remember that the banks will be asked to make recommendations. See that your name is on file with that department of each bank, trust company, building and loan associations engaged in handling F.H.A. financing and the local F.H.A. committee as well. It would also be well to be listed with all real-estate agents.

**13. For Rent:** Houses that are for rent or for sale are excellent prospects for modernization and repairs. Try to visit as many in your neighborhood as you can. Then make suggestions.

**14. Fires:** Every fire needs repair work of some kind. These should be followed up by call and suggestions made. The customer in all probability can be sold not only the necessary repair work but other work as well.



WITH acceptances from more than 6,000 financial institutions having assets in excess of thirty billions of dollars, the Federal Housing Administration has started its national campaign to promote building remodeling and repairs. The Act was signed the last week in June and by Labor Day local committee chairmen had been appointed in approximately 1,200 cities.

The campaign is being hailed in many quarters as the most constructive activity of the present administration because it is aimed at reducing unemployment in the industry most effected by the depression—the construction industry. To take people off relief rolls and reduce physical suffering during the winter months the administration is making every effort to stimulate remodeling this fall.

That the campaign is meeting with public support is evidenced by the report of the first thirty days' activity in the Chicago Area when applications were received for 565 loans and 1,170 jobs were started. The loan applications totaled \$219,000, an average of \$390.00 each.

The Federal Housing Administration is divided into ten regions with a regional director in charge of each. With the exception of the six largest states in each region are under a state director with the responsibility for organizing the local committees. The larger states are divided into districts.

Thus with 65 field offices the administration is in a position to keep the campaign going at full force in every section of the country.

The Washington office is manned with a staff of trained publicity people who have been drafted to sell this idea to the public. Already five

booklets have been prepared giving complete information, plans, methods for tying-in with the campaign, questions and answers, to financial institutions, the public, architects, builders, contractors, manufacturers, advertisers and advertising agencies, publishers, building supply dealers and local committees.

The bulletin on community campaigns is a composite of the experiences of 84 cities which have conducted similar campaigns since 1932, one of which, Philadelphia, received \$16,000,000 of remodeling work.

During the first two weeks in September 7,000,000 booklets were distributed to the public.

Arrangements have been made with a number of newspapers to start a remodeling section with material supplied by F.H.A.

#### How Money Is Being Used

An analysis of nearly two thousand jobs for which loans were secured officially reported to F.H.H. prior to September 21 shows an interesting breakdown as to how the money is being spent.

Purposes	No. of Jobs	Percentage
Heating .....	265	14.53
Inside Painting and Re-decorating .....	264	14.47
Plumbing .....	252	13.82
Exterior Repairs .....	177	9.70
Roofing .....	169	9.27
Outside Painting .....	168	9.21
Remodeling—General .....	155	8.50
Interior Repairs .....	102	5.59
Cementing .....	72	3.95
Lighting .....	64	3.51
Remodeling—Bathroom ..	56	3.07
Additional Rooms .....	44	2.41
Remodeling—Kitchen .....	36	1.97
	1824	100.00

Meetings have been held in Washington to which manufacturers and advertisers in the building industry were invited. These were followed by meetings in the larger centers. In the smaller places meetings are being held under the state or district directors. By the first of October the story will have been told to virtually the entire interested business element.

Visomatic machines in which pictures and voice are reproduced have been made available for telling the story to a meeting of the public in any place of the country.

The Act also provides for the financing of new house construction up to 80 percent of the cost of the land and improvements but in no case to exceed \$16,000. Details of this campaign are now being worked out and are expected to be released about November 1. In the meantime the entire effort of F.H.A. will be devoted to selling the remodeling and repair idea to the public.

The statistics show that approximately 16,000,000 buildings need repair and remodeling work right now. The size of the market is apparent.

With some 50,000 manufacturers and many times that number of contractors, architects and building supply dealers, as well as hundreds of thousands of building mechanics all interested in the success of this campaign backed up by millions of booklets, advertisements, radio talks, speeches at meetings and other publicity, there is reason to believe that this campaign to modernize buildings should get far greater results than other modernizing campaigns.

From early indications only a fraction of this work will be financed on partial payments. A large part of it is being paid in cash. The publicity will stimulate most of this business.

*Electrical Contracting, October, 1934*

# Modernization Profits Depend on Planning

By F. J. Seiler  
Assistant Editor  
Electrical Contracting

THE adaptation of an electrical contracting business that has been accustomed to new work to the remodeling and modernization market, to be profitable, necessitates some very careful performance planning. Contractors who heretofore were trained largely in doing new work must learn the peculiar responsibilities assumed in undertaking modernization or remodeling activities. The primary elements of this market begin with the estimate. But before truly accurate estimates can be made, several important factors must be carefully and intelligently determined.

## Bidding Safeguards

- 1—The condition of the present wiring system:

Whether scope of work carries also the responsibility for the correction of existing conditions. If so, where and what are they and what is the cost. Usually a separate bid must be rendered for this work for its qualification.

- 2—The portions of existing wiring systems which will safely carry additional loads:

Additional loads placed on old services, mains, submains or branch circuits usually obligate the contractor to correct any final adequacy requirements, unless distinctly exempted. A real selling job requires the checking up of all such conditions and the installation of proper capacity facilities.

- 3—Special conditions which may have been or which may later be cited by inspection authorities or the utility service department:

Often a competitor has been on the job with the inspector, and some special condition has been found which you may not have observed. If the least bit in doubt check it up before bidding.

- 4—Structural limitations which will determine the wiring methods required:

Are you sure the work can be concealed, or will it be necessary to make expensive round-about runs to please the customer? Is the condition adapted to the cheaper wiring method you have estimated, or will it be necessary to finally resort to more expensive construction? How thick are the walls? Stone, concrete or brick?

- 5—The amount of approved salvageable material:

A spare conduit may be found which will avoid some expensive cutting or channeling, if a careful checkup is made. It may be possible to split circuits or feeders.

- 6—Scope of cutting and patching:

Often cutting is estimated, but the patching up is assumed to be done by others. Make sure of this before you proceed.

- 7—Hours of access to work, time for cut-overs and definite scope of overtime operations.

- 8—Amount of temporary wiring needed:

Cut-overs involving uninterrupted service may require sizeable temporary installations, as for the replacement or moving of distribution panels, starter banks, etc. It takes time and material for such operations.

- 9—A cost knowledge of all the operations involved:

While it is assumed that those contractors who desire to enter this field will review the labor data covering old work in residences and apartments, it is imperative that close study be given to the special conditions of each job as it progresses, so as to develop a fair estimate of costs.

It is quite obvious that these problems are different from those that arise on new work. Therefore, it is easy to innocently bargain for a job which may later present some expensive and quite necessary unforeseen requirements, therefore a thorough checking up at the outset will pay dividends in the end. A contract for installing definite concealed outlets at definite locations must be based upon a knowledge of how it can be done, and what it will cost in performance. It is also unreasonable to expect sympathy from the inspection authorities, if through the addition of certain new work, the existing system becomes overloaded, or if their instructions as to correcting cited hazards are not fairly carried out.

## Obligation on Salesman

A job in an occupied residence or apartment is likely to represent complications for the most skilled wireman, if in selling additional outlets the lack of muss has been over-emphasized by the solicitor in order to break down the sales objections of occupants. To be sure, no one wants one's home cluttered with trash or unnecessarily tracked up with plaster grit, yet a certain amount of annoyance will occur, some furniture must be cleared away, and workmen may need to explore into rooms where no work is done, for the purpose of determining structural conditions, or the routing of concealed "hot" wires, etc. A tactful yet reasonably accurate forewarning to the housekeeper will save some expensive "stop work" orders. Differences or misunderstandings between the wireman and the housewife may consume a sizeable share of the anticipated profit, and very often such occurrences lead to slow collections and loss of future calls.

In commercial or industrial remodeling operations, which so often require continuous service, a most care-



### PROFIT PRODUCERS

- 1—Careful estimates inclusive of all minor items.
- 2—Definite instructions to workmen—close contact with job.
- 3—Legible layouts and sketches.
- 4—Minimize on-the-job engineering.
- 5—Efficient tools—sufficient amounts of correct materials.
- 6—Prompt assignment of men to the next job.
- 7—Encourage workmen sales effort, and the picking up of leads for new business.
- 8—Close scrutiny of salvageable existing work.
- 9—Correct buying of higher turnover items.
- 10—Watch for short cuts. Improve on estimated layout.

ful preliminary survey is of utmost importance. Overtime must be minimized, the system must operate safely during the periods when the job crew is gone, and such access limitations as may be peculiar to a certain shop or industry must be clearly anticipated. Hasty guesses as to the length of shut-down periods for making important changes often lead to criticism of the contractor, and the replacement of an innocent workman who is most likely doing a fine job. Crew replacement drains the profits.

### Layout of Work

Definite outlet locations should be established if at all possible. In residences a chalk or crayon mark may be made on the baseboard for convenience outlets, while a variety of simple methods may be employed for outlets on plastered walls, such as memoranda stuck up with thumb tacks, crayon marks, or a descriptive outlet schedule. On larger work it is presumed that a sketch drawn to scale, or with definite measurements will be given to the foreman.

An occurrence recently related from the field will best illustrate the importance of exacting instructions to wiremen: A wireman was sent out on a convenience outlet installation with instructions to work out the locations with the housewife. Later in the day the contractor found that many of the outlets were being installed below the wall switches. Being adjacent to door casings they were only half convenience outlets, as regards their area operating efficiency.

### Selection of Men

The man on the job can "sell the shop," can sell additional outlets, devices and repair work, if he is of the right type for this special field. In addition to mechanical skill, experience and neatness, residence and apartment work requires such further qualities as diplomacy, sales personality, patience in dealing with women, good moral conduct, restraint in the use of foul language, and honesty. The improper selection of men invites such annoyances and expensive accidents as breaking through ceiling plaster, denting or scratching furniture with tools, wire-stained floors from walking on loose conductors strewn about the house, breakage of glassware or decorative objects about the house, splintering of old woodwork, hot solder spillage damages, cigarette burns on furniture, and sometimes complaints of social improprieties and theft.

Commercial remodeling work does not involve some of the exacting requirements as does work about the occupied home. However, a foreman who is accustomed to new job procedure may be decidedly lacking in the art of selling the storekeeper or shop superintendent some of the nice extras which the "time and material job" foreman of the past was capable of doing. Therefore, the contractor must take an active interest in training men to become adapted to this work.

One contractor who has been particularly successful with small jobs, held weekly meetings with his men for the purpose of developing their best suggestions as to the bettering of all phases of this work. Complaints from customers were cited at these meetings for the benefit of all concerned in avoiding similar difficulties. Furthermore, all important changes in Code rulings, outlet cost schedules, etc., were multigraphed, and a letter sent to each wireman. Thus, after rule changes occurred, there was little or no confusion, and very few correction call-backs from the inspection department.

### Job Management

"Plan your work—work with your plan" is certainly applicable to the management of smaller jobs. Many cities have working rules which require payment for at least four hours' labor per day to wiremen sent out on a call. Jobs must therefore be kept

### LOSS PRODUCERS

- 1—Unforeseen overtime labor costs.
- 2—Failure to charge for all materials installed.
- 3—Non-productive time while awaiting materials.
- 4—Lax workmen pickup and transfer schedule.
- 5—Claims for damages to furniture, furnishings or structure.
- 6—Stolen tools and materials.
- 7—Extra trips through inefficient material purchases, indefinite appointments.
- 8—Code oversights—inadequate circuiting, incorrect fittings, etc.
- 9—Vague or confusing instructions to men.
- 10—Inefficient tools.

well organized to avoid non-productive labor costs, since a customer will not pay four hours' labor charges for a two hour job.

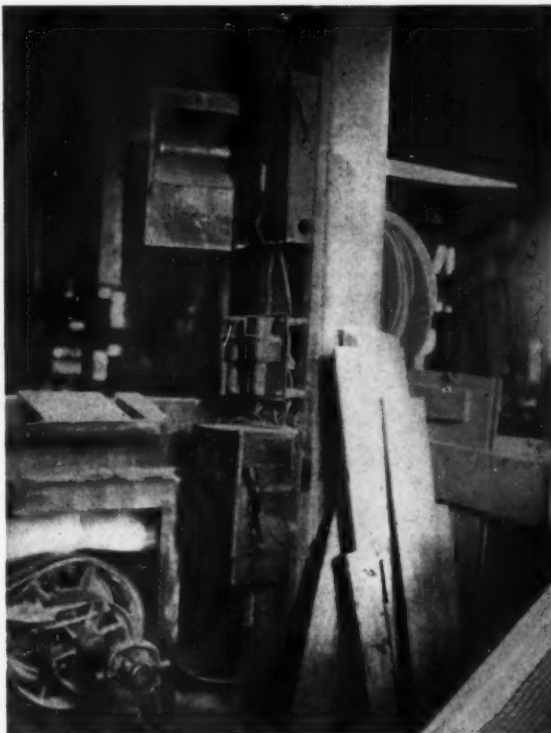
In busier days and when prices were better, many contractors supplied trucks for the all day use of wiring crews. With a shrinkage in margins and volume this practice has dwindled. In some localities the wiremen arrange to use their cars, and work with a minimum supply of tools and material as required for the smaller jobs. Several firms are very successful with a "mobile supply" system. One or more trucks are loaded each morning with a full inventory of common types of material, and a list of tools. All men telephone to the office one hour before completing a job, are then picked up and transferred to the next job, where an approximate supply of material and the proper tools are left. When moving to the next job the truckman is given a list of materials used on the previous job, and excess materials are added to the truck stock. Special jobs are supplied with the anticipated materials and tools before the men are assigned to the job.

The control of job materials is a much debated question. Where the business comprises mainly small jobs, close supervision will eliminate much costly office routine by the write-up of material lists after the job's completion. A study of the types of materials best suited for the common classes of work encountered will develop a standardized stock in reasonable quantities, thus saving the delays and annoyance of piecemeal buying.

*Electrical Contracting, October, 1934*



Ungrounded motor starting switch for 5 h.p. swing saw, showing the six wires draped behind a ply-wood guard to motor directly above. Note single-pole open switch on side of column for lighting control. Part of belt guard which "encloses" this switch had been removed to obtain photograph.



Starter for a 10 h.p. motor located 30 ft. distant. "Temporary" flexible steel conduit extends loose on floor to motor, minus terminal box at motor or end of conduit. No ground connections, improperly bushed wires at switch, open relay terminals.

## Wiring Hazards In a Small Wood Working Plant

When a power service was recently installed in an Indianapolis wood working plant to relieve the load on an ancient generator, the inspection department of that city found some extremely hazardous wiring conditions.

The surroundings in establishments of this type are none too favorable under good "house-cleaning" conditions, with their daily accumulation of sawdust and shavings in the midst of a quantity of kiln dried wood mouldings and trims. Electrical sparks or insulation fires could easily ignite this combustible material.

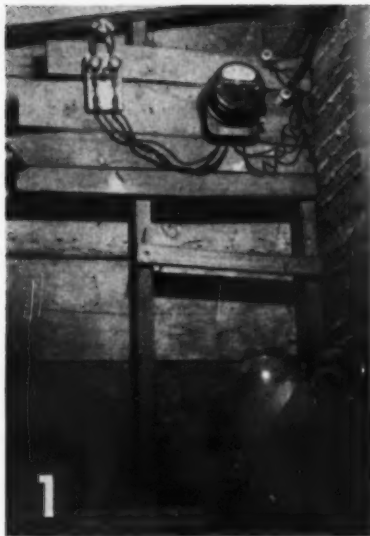
Open wiring, in some cases guarded with veneer wood panels, was found supplying lights and motors. Open single-pole knife switches installed on wood columns, ungrounded motors and starters, open wiring entering unbushed steel cabinets and sawdust-blanketed motors were among the conditions found.

*Electrical Contracting, October, 1934*



A 1/2 h.p. 110-volt saw motor, controlled by snap switch at left rear corner of saw base plate. Cord wiring enters porcelain base beneath sawdust blanket.

# House Wiring Modernization Opportunities



1. Meter boards? A wireman's masterpiece. This serves a 6-room residence but without fuse trouble. (Papa buys bargains—30-amp. fuses for the same price as 15's.)



2. And here we have adequacy—floor outlets as you want them. A wide room beyond the wall in foreground has no basement, but where there's a fishing pole, fishing can be done to floor outlets in remote corners. Didn't someone say to fish in for old house wiring?



3. Originally a gas fixture now electrified but not switched. Note the brass socket to which various electrical devices must be plugged while in close proximity to plumbing equipment. A good example of possible bath tub fatalities.



4. An example of early American combination gas-electric fixturing—no wall switches or convenience outlets in this room.



5. The absence of kitchen outlets is readily perceptible here. This chain drop and No. 18 fixture wire must serve many heavy demands while the triple socket has defeated the purposes of a homely shade which now adorns the cupboard. Of course, no wall switch.

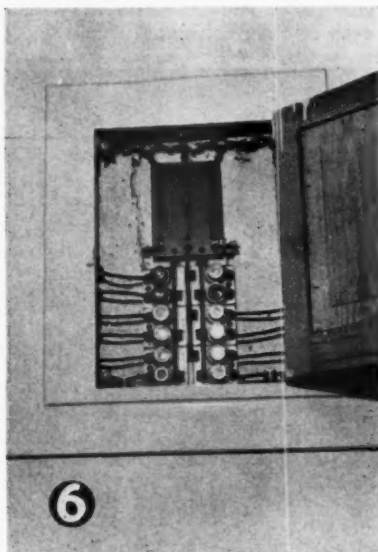


**(A) Obsolescence:** Much of the service and electrical hardware material installed prior to the war as well as the lighting equipment is not only out-of-date but out of keeping with its surroundings. It is mostly museum material.

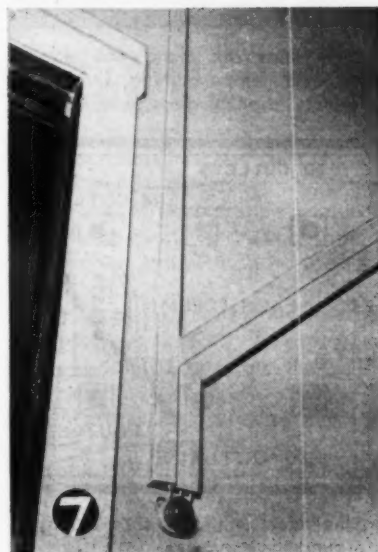
**(B) Defective Wiring:** Additions by inexperienced people and wear and tear cause many jobs to become defective. They should be corrected.

**(C) Hazardous Wiring:** Brass shell sockets in bathrooms and basements, screw base baseboard receptacles and other forms of wiring once considered safe should be changed.

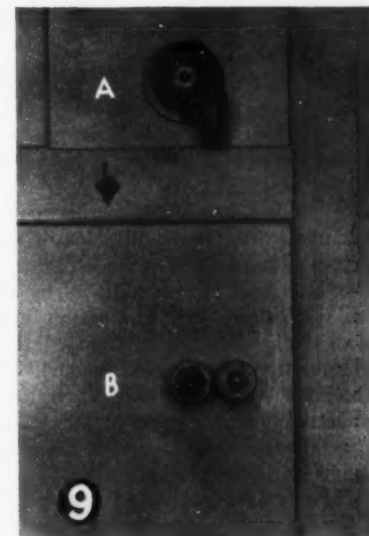
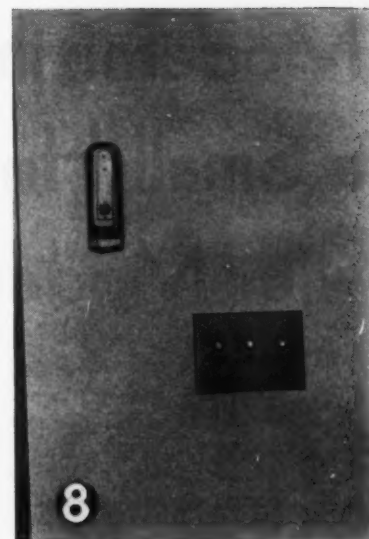
**(D) Inadequacy:** Few of the older homes have enough outlets, switches, circuits or large enough service.



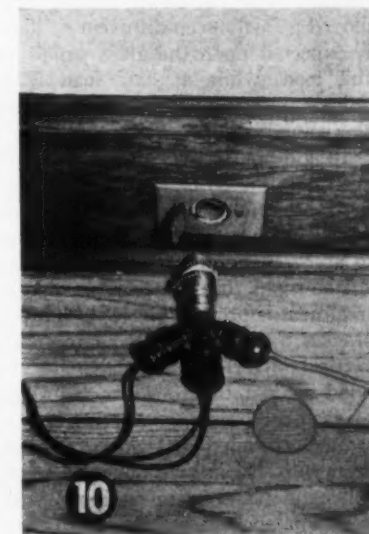
6. The service switch in this wooden cabinet is equipped with two strips of fuse wire, while the right-hand pole has No. 18 solid bell wire. Note meter loop bushings in back of cabinet to meter on opposite side of wall. A field for improvement.



7. Surface wiring for stair light with three-way switches has been encased in home-made wood molding.



8. The replacement of old switches and tarnished plates with modern types offers a field for considerable activity. Here especially, the thermostat with its new finish makes a striking contrast, and also indicates a home in which the best salesman will get an order.



9-a. Safe kitchen convenience outlets are needed to replace such hazards as this cord tap from beneath a canopy. It won't take long to wear out this cord and start the fireworks. b. Note the two obsolete surface mounted switches, one a toggle and the other a rotary snap.

10. A picture of inadequacy and obsolescence. How far do these cords wind their hidden ways? Who has ever made an effort to replace this long outlawed screw receptacle? This one happens to have a cover but there are thousands in service even without covers.

# Modernizing a Small Hotel with Modern Lighting

THE influence of modern lighting effects as developed in the newer hotels and restaurants, following flowing lines, concealed panels and flush plaques, is spreading until today there is a desire for owners of smaller existing hotel properties to adopt similar methods. This adaptation of modern lighting effects represents a wide variation of types.

The replacement of a ceiling fixture dining-room lighting system with a lighted panel effect is now nearing completion in the Pere Marquette Hotel at Peoria, Ill.

The entire perimeter of this room, including the front and sides of the orchestra canopy, is provided with a box-like wooden frame 12 in. by 10 in., fitted to the corner of ceiling and wall. The face and bottom of this frame are uniformly divided at 48 in. intervals by horizontal and vertical rabbetted mullions to receive the glass panels, which are to enclose 25-watt lamps on 12-in. centers.

The circuits employed in the panel lighting system are arranged for alternate outlet control from the panelboard. With the outlet spacing employed a fairly even diffusion of light is expected upon the glass panels at full load, while at half load it is claimed the effect will not detract from the color scheme.

In addition to the continuous panel encircling the outer walls of this dining-room, eight columns are likewise boxed in on four sides at the ceiling to assist in lighting the center areas of the room. Further decorative light treatment is provided in replacing ten bracket fixtures at the columns with vertical inverted metal troughs to flood against the four paneled sides of each column.

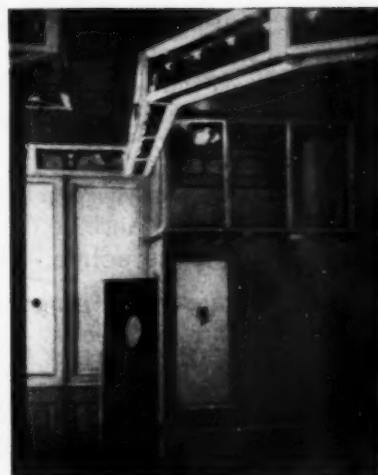
Steel troughs 5 ft. long, 3¼ in. deep with 4¾ in. wide opening, with solid end plates were equipped with six twin sockets on 19 in. centers.

Sockets were nipped into inverted ½ in. by 1 in. channel iron wiring raceways at the back of the troughs. A flexible cord and plug connection was provided at the upper end of the trough.

The wiring alterations within the remodeled area were concealed in a 24-in. furring space above the ceiling. Flexible steel conduit was fished in to inter-connect junction boxes at each column. The column panel frames were wired within the four sides for a total of twelve 25-watt outlets each, with the junction box concealed within the frame. From each junction box a concealed flexible conduit run was also made to supply a receptacle for the vertical column cove trough.

In decorating this room, it is planned to follow a blue and light yellow combination for woodwork and draperies, likewise carrying out the same colored flood-lighting effect by special translucent paint applied to the glass panels.

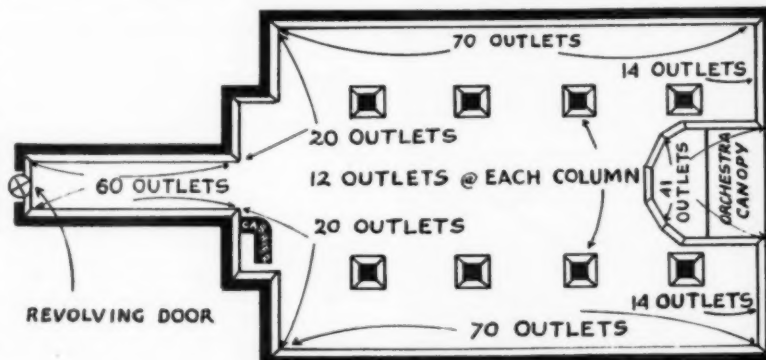
This remodeling job resulted in a 50 percent increase of wattage and the use of a larger panelboard to accommodate the additional circuits required by the extensive changes in lighting. The wiring was installed by Jerome Electric Co. of Peoria, Ill.



A view of panel frames at orchestra canopy. At left foreground a partial view of framework installed around each of eight columns.



Panel framework along one side of room with lamps burning, but before the installation of glass panel sections.



A plan of the remodeled room indicating the panel lighting system along the outer walls of room and around the columns.

## Methods Used in Installing

# Thin Wall Conduit in Tile Floor Building



New U. S. Post-Office Terminal, Cleveland, Ohio  
John Paul Jones, Carey and Millar, Inc., Cleveland, Electrical Engineers

IN wiring Cleveland's new Post-Office Terminal, the Hatfield Electric Co. of Cleveland, Ohio, installed approximately 225,000 ft. of assorted  $\frac{1}{2}$  in.,  $\frac{3}{4}$  in. and 1 in. sizes of electrical metallic tubing. The methods employed in installing this material in a large steel frame and tile floor structure such as this, provide information that has not been obtainable for similar large scale conditions.

This contract was awarded at a time when the prevailing market for government work was at a low level, thus requiring extreme care in the planning and supervising of the job for most favorable results. The decision to use electrical metallic tubing required a study of the methods which would insure (1) a minimum amount of injury to this material before its concealment, (2) protection of runs stubbed up from floor, (3) prevention of concrete seepage at possible loosened couplings, (4) efficient labor costs with strange material, and (5) the location of concealed runs so as to be removed from possible future floor drilling by other crafts.

*Electrical Contracting, October, 1934*

### Roughing-in Procedure

Most of the work was run concealed in the concrete floor fill on top of the tile, and in the columns and wall construction, since the various systems of this job including the mail handling conveyor system were awarded in time to permit their being laid out for concealment. Since no runs were installed in the tile floor construction, but in the floor fill instead, the only operations involved during the tile setting stage of each floor consisted of the setting of sleeves for ceiling outlets and certain stub-ins for switch legs.

By the installation of tin sleeves in the tile floor construction for ceiling outlets the entire running of circuit tubing was performed in one continuous operation on the rough tile. The nipping together of short stubs from outlets in the tile floor was eliminated, and their possible injury prior to being nipped together was, of course, avoided.

### Setting of Boxes and Cabinets

All panelboard boxes and wall outlets were preset prior to commencing pipe work. Free standing panelboards were supported with angle iron or channel irons from floor to ceiling, thus all runs could be made up completely, ahead of the partition construction. Wall and column outlets were likewise preset, so as to

eliminate unprotected stubbed-up runs wherever practicable during the interim of being bricked in.

### Making Up Runs

To insure against loosening up of coupled lengths of tubing and the attendant danger of concrete seepage, the ends of tubing were belled or flanged out before being coupled up. This involved the use of a drifting tool and at some work centers, a bench mounted flanging machine. "Drifting" of lengths consisted of the insertion of tool into the ends of tubing, and several sharp hammer blows until the tubing wall indicated the proper belled-out proportions. Short pieces of tubing were flanged out by machine, since they required chucking up to withstand the necessary pressure for wall expansion. It is claimed that the flanging operation compares favorably with the time required for pipe cleaning labor costs. The coupling assemblies were slipped over tubing before the second flanging or drifting operation was performed.

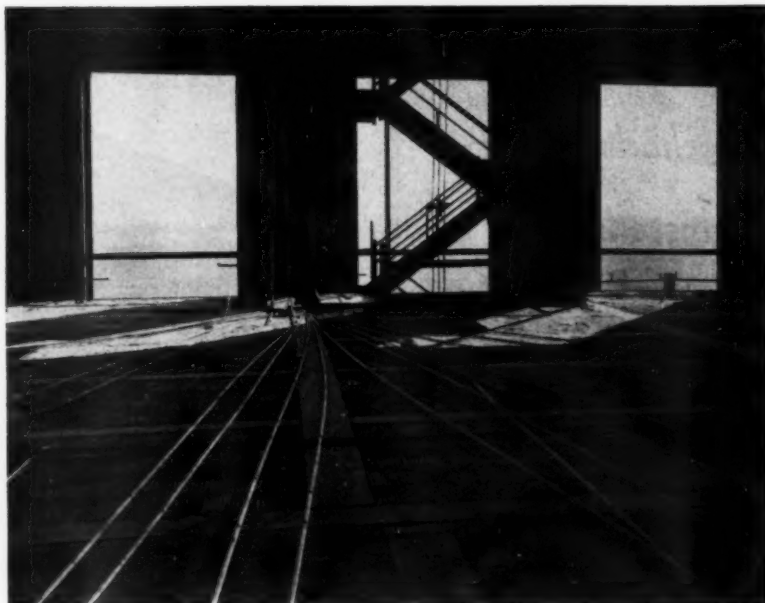
### Few Crushed or Damaged Runs

The floor fill aggregate was distributed over the various areas with pneumatic-tired concrete buggies. Due to this cooperation by the general contractor, there was no crushing and little displacement of tubing during the floor fill pouring stage of





A typical condition near distribution centers showing steel tubes laid on top of tile arch and installed into outlet boxes on ceiling below. Home runs are made up complete to cabinets.



A group of steel tubing home runs converging on top of tile and stubbed down to panelboard on floor below.

the job. Those runs which crossed areas where the floor finish was delayed, as for instance vestibules and elevator lobbies, necessitated the exposure of numerous tubing runs on top of rough tile. These locations were heavily traveled for several months in the handling of materials with wheelbarrows and warehouse trucks, with the attendant whipping and knocking about of the installed tubing. The contractor reports that under these conditions there was no loosening of couplings, nor crushed tubing.

Damages to concealed runs resulting from the drilling of floors by other crafts, while unavoidable, represented a simplified repair problem. Floor slots 2 in. wide and usually 12 in. long were usually found sufficiently large to permit the replacement of punctured or crushed tubing. The insertion of new tubing sections after the cutting out of the existing material was a relatively simple operation due to the ease of coupling make-up.

Isolated stubbed-up runs at locations where there was to be no partition were made with heavy wall rigid conduit. About 4 ft. of this heavier material was concealed in the concrete fill, at which point it was connected with the electrical metallic tubing circuit.

#### Labor Adaptation

This project was completed at a time when the rotation of labor was forced upon the larger jobs, thus imposing upon the contractor the further problem of using men, who in some cases, were installing electrical metallic tubing for their first time. While this would appear to present

a severe handicap from a cost standpoint, it was discovered that there was little difficulty on the part of skilled mechanics in the efficient use of this material.

An analysis of the actual unit labor costs for this project has not yet been made available, this being limited to the statement by the electrical contractor that the total actual cost, as compared with estimated costs, has been quite favorable.



Flanging out steel tubes. Drifting tool is inserted in the end of a length of tubing. One sharp hammer blow performs the operation.

#### SUPER-POWER SOUND PROJECTOR

A loudspeaker which can magnify the human voice 1,000,000 times and which can be made 500 times more powerful than ordinary loudspeakers was used during the International Yacht Races aboard a coast guard cutter on course patrol duty, announces the Western Electric Company, its designers. Hurling sound into the air with the force of a 50-pound hammer blow, it is 1,000 times louder at the horn's mouth than the roar at the foot of Niagara Falls, and can be made louder than a clap of thunder. Claiming clarity at full power, its use is predicted for directing vast throngs of people in the presence of loud noises, fire fighting directions, rescues at sea, fog warnings, etc.

*Electrical Contracting, October, 1934*



# Adequate Wiring is Self Liquidating

By T. R. Hay

**O**F new building there is little at this time, but of modernization work there is evidence on every hand. Building modernization presents both an opportunity for work and a responsibility that this work shall be done properly, adequately and economically. If the building owner and the tenant on the one hand and the general contractor and the electrical contractor on the other could always agree on the ultimate economy and advisability of adequate electrical wiring and outlets, much work that is now torn out to be replaced by more adequate wiring could, instead, be used to meet the new requirements, either by re-location and/or extension, the savings being put into more and better lights and appliances, to the benefit of all concerned.

A good illustration of the application of these general principles is to be found in the electrical wiring of a Brill Bros. store located in one of the main shopping districts in New York City. This store is located in a three-story building with basement. About three years ago when the building was modernized it was completely wired. The entrance service comes into the sub-basement where the meters and main panel board are located. Provision is made for power circuits in the basement and sub-basement; lighting circuits are provided for all floors. At the time of modernization, all circuits were made adequate for reasonable requirements plus an added factor of adequacy to provide for

an increase in the size and number of lamps and for the addition of new circuits and outlets.

This plan of wiring enabled the new tenant to alter the location and character of the proposed load at a minimum of expense for wiring and outlets. Larger and more attractive lamps and fixtures than had originally been used were installed. Another interesting illustration of adequacy was the installation of the main lighting circuit for the selling floor. This circuit as originally installed was pulled through an over-size conduit, only two wires being used as the initial requirements only contemplated the need and use for a two-wire circuit. The present tenant decided to use staggered lights which required 3-wire 2-circuit wiring. This was easily and economically accomplished by pulling a third wire through the conduit. On bright days only one-half the lights may be required; on dark cloudy days and in the winter evenings all lights will be used. Attractive lighting fixtures of original design employing indirect lighting effects give a soft, but sufficient light that enables effective showing of the merchandise.

Window lights are fed from an independent circuit separate from the store lighting. Convenient outlets are installed at carefully selected points for table lights, vacuum cleaner, fans, etc. An effective inside window display

is secured by placing an illuminated case on a pillar on the stair landing. All show cases are effectively illuminated from a floor circuit.

From the above discussion it will be noted that by careful planning it has been possible to secure unusual lighting effects at a reasonable cost and at the same time utilize separate circuits for each principal use, such as overhead lights, window lights, show case lights, etc.

An interesting feature of this installation is that Pabst Electric Co. of New York City, the electrical contractor, wired the building, in the first instance, on a labor and material contract. No competitive bids were asked. This involved an original wiring cost of 10 to 15 per cent higher than might have been the case had the building owner shopped for bids. The same electrical contractor did the wiring alteration work for the present tenant. The award was made, by the general contractor, because of the familiarity of the electrical contractor with the installation, because a good job of wiring had been done, and because the charges were believed to have been fair and reasonable. As a result of the manner in which the original wiring had been done, the building owner saved more than the original added cost of wiring, because of the relatively small expense involved in making the alterations needed.

## ADEQUATE WIRING PAYS THE CUSTOMER

### Cost of Adequate Wiring in Brill Store:

Original cost .....	\$2,200.00
Changes for special needs .....	50.00

Total Cost .....	\$2,250.00
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### Estimated Cost of Inadequate Wiring in Brill Store:

Original cost to install minimum wiring .....	\$1,900.00
Changes for special needs .....	850.00

Total Estimated Cost .....	\$2,750.00
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Estimated Savings .....	\$ 500.00
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This saving of \$500.00 was made as the result of an initial investment of \$300.00 (the excess cost over minimum wiring)—a return of 167%.

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# electrical contracting

*With which is consolidated Electrical Record*

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S. B. WILLIAMS, Editor

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## NEW IMPETUS TO RANGE WIRING

**W**ITHIN the past few weeks an electric range has come on the market that is in the price class of the uninsulated gas ranges. This is a remarkable achievement and is bound to be reflected in a great impetus to electric cooking.

Electric ranges at around \$200 could not percolate very far below the large income group. Now, however, with a list price of around \$60 there is no limit to the market. It is also our opinion that many utilities that have not already reduced their rates for this class of service will find encouragement to do so with this new range.

To the contractors this should mean a few millions more a year in range wiring. However, it is going to be necessary to develop methods whereby quantity production installations can be made for less money. It will never do to have a fifty or seventy-five dollar wiring charge for a sixty dollar range.

*Again we ask—when is a joint committee of the contractors, manufacturers, utilities and inspectors going to get busy and develop one or more standard low cost range wiring hook-ups?*

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## PRICE SHEETS

**T**HE National Electrical Contractors Association is going direct to manufacturers to secure for the industry a recognition in price-sheets of the contractor as a sales outlet by classifying consumers as such and recognizing them with a discount only as earned by quantity purchases.

This would seem to be a move in the right direction. Joint committees can produce a statement of policy or a set of principles,

but action can come only from the individual manufacturers.

As soon as a few manufacturers have brought out such price-sheets and the contractors have shown their appreciation the other manufacturers will follow. The association also apparently is going to notify its membership what manufacturers have revised their price-sheets in accordance with the wishes of the contractors.

This activity of the N.E.C.A. ought to be very valuable to the entire contracting industry. It is the type of job that only a well organized association can do. It is hoped that more constructive work of this nature will be undertaken and we are confident that it will be as the contractors themselves give better support to the association.

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## LESS THAN 15 PER CENT

**L**ESS than 15 per cent of the electrical contractors of the United States have been in business less than 10 years.

Startling as these figures are, which have just been completed by ELECTRICAL CONTRACTING, they nevertheless give a fairly accurate picture of an industry at the close of a depression. A few years ago there were more than twice the number of electrical contractors that there are today—and a very large percentage of that larger number were new in the business. These new, and, as conditions have proven, very largely poorly financed contractors, were the curbstone type and because of their lack of business training and hunger for business were responsible for much of the abuse heaped upon the industry by others.

Now with the prospects of a greatly increased new house wiring and a remodeling market under the sponsorship of the Federal Housing Administration the prospects for the members of the industry that have been able to stick it out are much brighter. The question that is uppermost in our minds, however, is whether with 85 percent in the industry old and trained business men, we are going to secure for the industry a better reputation. The curbstone contractor was supposed to be the one who cut down rather than built up a job, who worked day and night in order to make a living at the low prices he quoted, who did careless work. With the curbstoner gone, we expect to see more selling of adequacy and a better morale generally in the industry. If not,

then perhaps we shall have to revise our opinion of what constitutes a curbstoner.

#### N. E. CODE REVISION

AT the various sectional meetings of the inspectors' association this fall representatives of electric light and power companies are presenting their suggested revision of the National Electrical Code whereby it is proposed that the Code should be reduced to a set of fundamental requirements applying to standard wiring materials and devices. The detailed application of existing materials to these fundamental requirements, it is proposed, should be embodied in a manual of field practice as an appendix.

In presenting this proposed Code the representatives of the utility group have made it perfectly clear that their interest lies in securing lower cost wiring installations, particularly in residential occupancies, through the introduction of wiring materials and methods not now recognized in the Code. Their intent is evident from a suggestion in their presentation which states "A manual of field practice should contain a statement to the effect that 'It is an official commentary on the National Electrical Code and contains detailed information and practices in conformity therewith whereby the Code may be applied to generally accepted methods and materials. On the other hand, there may be methods and materials not covered in the manual which are equally in compliance with the Code.'"

Much of the reason given by the utility group for revising the Code is sound and constructive. The Code has grown in keeping with advanced practice of the art with the natural result that it is difficult to use. While the Electrical Committee and its chairman have recognized this condition and have made considerable progress in clarification of the Code, it is nevertheless quite evident that a major operation in this direction is necessary. It is equally true that the Code contains a number of dimensional and manufacturing standards of materials which are quite unnecessary from the standpoint of providing safety.

These points, however, can be taken care of by a Code revision which does not reduce the Code to a mere state of fundamental principles. The Electrical Committee has not written into the Code hundreds of detailed rules of application for the purpose of hamstringing the industry, but solely because it has been necessary for the clarification of the intent of the Code to make

these definite rules. Without them it would be virtually impossible to secure standard Code compliance.

We sympathize with the point of view of the utilities that it is too difficult today to introduce a new wiring method into the Code. A solution to that, however, is not to throw new wiring methods upon an industry and permit inspectors to pass upon them without any national guidance such as would be contained in the Code. It is our opinion that new wiring methods should not be debarred from the Code until they have proven their fitness, but upon their introduction to the Electrical Committee, there should be set up rules governing their installation which the committee feels are essential to secure safety. In all probability the initial rules will be more stringent than necessary, but that will only be because of lack of field information. The results of field experience would provide the facts for expanding or further restricting the use of the product in subsequent editions of the Code or supplements thereto.

The proposal of the utility companies that new methods not covered by the Code be assumed to have equal safety as though in the Code will, we believe, confuse the work of the electrical inspector and make it possible for shoddy practices to creep in. On the other hand, we do believe that this is a proper time for the Electrical Committee first to give consideration to a revision of the National Electrical Code for the purpose, not of reducing it merely to fundamentals, but of rearrangement in the interest of clarity, and second to announce a clear-cut statement of policy with respect to the introduction of new materials which will encourage the constructive development of new methods and new devices. We do not believe that the National Electrical Code can take cognizance in any way of commercial competition or the matter of price. At the same time we believe that the Electrical Committee should, in its policy, make such an announcement as will prevent commercial sabotage in the case where some interest is dissatisfied with the Committee's decision.

It has been only after considerable effort that the National Electrical Code has reached its present condition as a national and uniform standard. To undertake an emasculation of the Code would result in the last Code in its present form becoming the standard for years to come in city after city, thereby destroying progress.



# \\ code chats ///

A MONTHLY DISCUSSION OF WIRING PRACTICE AND QUESTIONS OF INTERPRETATION, PRESENTED WITH A VIEW TOWARD ENCOURAGING A BETTER UNDERSTANDING OF THE NATIONAL ELECTRICAL CODE

CONDUCTED BY F. N. M. SQUIRES  
CHIEF INSPECTOR, N. Y. BOARD OF FIRE UNDERWRITERS

## USE OF 4-WIRE ARMORED CABLE

*Is 4-wire armored cable approved for installing 2 circuits of 2 wires each? Or, must this be used for double pole switch feed and return only?*

Either use is permissible. There are other uses also which would be permitted such as for a 4-wire circuit on a 3-phase 4-wire system giving the equivalent of four 2-wire circuits. Or, it could be used on a sub-divided 2-wire circuit where it was desired to sub-divide the circuit load on three switches.

A 4-wire No. 14 armored cable could not, however, be used for three 2-wire circuits using a common neutral fed from a 2-wire supply as the neutral would not be of sufficient capacity.

## IS AN ELECTRIC CLOCK A PORTABLE?

*Is an electric clock as ordinarily used in the average home a portable appliance? If so, is it permissible according to Code requirements to connect the clock solidly to the circuit wiring?*

In order to insure that an electric clock continues to show correct time, it must remain at all times connected to the circuit and, therefore, it cannot satisfactorily be moved from one part of the house to another. Therefore, it is not by nature portable. However, the good housewife does desire to clean and dust the mantle, table, or what have you, and therefore the clock is lifted and moved about somewhat. Such a clock, therefore, is just as much a portable as a bridge or table lamp which does duty for years just behind the left arm of the easy chair in the den. So why should there

be any objection to connecting the mantle or desk type of electric clock with an attachment plug? Article 16 of the Code does not register any objection to such procedure.

Again due to the advisability of a permanency of connection and an improbability of need for moving the wall or kitchen type of clock, it would seem that a solid connection of the clock wires to circuit wires would be desirable. No rule is evident in the Code to prevent the connection of such a "fixture." Therefore, either way seems to be suitable and unobjectionable. Just apply the rule of common sense.

## SECURING RIGID CONDUIT IN PLACE

*What are the requirements for securing rigid conduit according to the Code? Why does not the Code provide for distances between supports on rigid conduit as it does in Section 505-f for armored cable?*

Due to the flexibility of armored cable special attention has to be given to its installation, hence rule 505-f.

But for conduit, the requirements are found only in the last sentence of paragraph 503-g and in general rule 207-a. And right here note that "wooden plugs driven into holes in masonry" are not approved. The matter of securing conduit in place, therefore, is left to the judgment of the installing contractors and the inspectors.

It does not seem at all severe to require that all conduit be secured by straps within about a foot of each outlet and also within a foot of each side of each coupling.

## FUSIBLE LINK SWITCH ON GASOLINE PUMPS

*In connection with an installation of a 5-hp., 3-phase, 220-volt motor in an oil company plant for gasoline discharge, we find that existing motors have a double-pole switch cut in on the "remote push station," mounted on an "I" beam, out in the open above the fill lines. This switch is encased in a conduit with a vapor-proof cover for external operation of a tumbler switch. From the end of the operating handle a piece of sash chain is secured, the other end containing a lead weight which is suspended from the same beam by means of a fusible link. The theory of operation is that in the event of fire the fusible link is melted, permitting the weight to drop, which in turn pulls the plunger operating rod down so that the tumbler double-pole switch goes to the "off" position the same as if operated by hand.*

The existing motors are within a pump-house enclosure, but this installation is out in the open about 10 ft. away from present pump-house which means that a piece of angle iron would be erected from ground to a point above motor and this "fusible-linked-weighted-switch" suspended therefrom.

The feed lines to this motor emanate from an explosion-resisting switch mounted on outside wall of present pump-house and run underground to motor.

We have installed a number of like installations under the supervision of the New York Board of Fire Underwriters, but have never encountered an installation like this fusible-linked-weighted-switch, and cannot find that it is an "Underwriters" requirement,

Electrical Contracting, October, 1934



# Look! An Upheaval in Starter Design!

## 50 and 100 Ampere Solenoid Starters now added to Bulletin 709 Line



**View of Size 2 Starter, removed from cabinet. Arc hood is open to show contacts and arc chambers.**

**This patented arc hood steps up switching capacity tremendously. Ten times maximum rated current at listed voltage easily disrupted.**

**Double-break contact design eliminates flexible leads. No insulating oxides can form on the silver alloy contacts. There is no contact maintenance.**

**Vertical switching action prevents accidental closure from jars or jolts. No bearings to stick. Pick-up and drop-out voltages are astoundingly low:—pick-up 70%; drop-out, 50% of line voltage.**

**This solenoid-operated switch occupies much less space than clapper switches. It is the smallest starter on the market for its ratings. Ideal for group mounting.**

**Two soldered-type relays, reset from front of cabinet, afford accurate and dependable overload protection.**

**The switch is self-insulated—no slate, porcelain, or molded panels are used. Switch units may be bolted on metal surfaces without additional insulation.**

**All electrical connections are accessible from front of switch. There is no back-of-panel wiring.**

**Cabinet covers are removable. There is extra large wiring space. Cabinets have white interiors for better illumination during installation or inspection. Knock-outs are on all sides and back of cabinet.**



**Size 1 25 Amp.**      **Size 2 50 Amp.**      **Size 3 100 Amp.**

**Bulletin 709 Solenoid Automatic Starter**

Size	110 V.	220 V.	440-550 V.
1	3	5	7½
2	7½	15	25
3	15	30	50

With the larger ratings now available in the sizes 1, 2, and 3 Bulletin 709 starters, the majority of across-the-line switch applications can now enjoy the advantages inherent in the solenoid starter. Before you buy new automatic starters, make a thorough investigation of the enlarged Bulletin 709 Solenoid Line. Send for Bulletin and Price Sheet.

ALLEN-BRADLEY CO., 1307 S. First St., Milwaukee, Wis.

# ALLEN-BRADLEY

## BULLETIN 709 SOLENOID STARTERS



# QUAD

## LEADS AGAIN *with a New* SPADE SIGN REFLECTOR

Here is the newest QUAD sign reflector that embodies many unusual features not found in the more conventional types of sign reflectors.

The smooth rounding surfaces make possible a porcelain enamel finish which gives a higher resistance to chipping—in addition it is more attractive. The streamlined design offers a minimum of surface resistance to wind pressure.

The new QUAD Spade gives a clearer view of the sign it lights—it's inconspicuous—

Easy to assemble and install—the reflector and socket housing are of one continuous piece of metal without seam, weld or joint. It is the only angle reflector without seam between neck and body.

### QUAD FLOODLIGHTS



Here is the newest Quad unit, a porcelain enameled floodlight with two new and outstanding features that mean more business for you. (1) The chromium plated projector delivers a longer, broader beam—without streaks or striations and (2) the aluminum wire-enclosing bracket puts the light just where you want it—with only one bolt to tighten.

The new Type J Bracket has a 40 deg. vertical adjustment, 20 deg. up and 20 deg. down, and in addition, for the first time, a horizontal swing of 180 deg. without moving the bracket. It fully encloses the wire.

The QUAD Spade Sign Reflector gives straight line cut off of light, requires a shorter supporting pipe and produces uniform sign illumination.

Be sure your next sign lighting job is done with the new QUAD Spade Sign Reflector.

See your wholesaler or write us for literature giving full description and details.

**QUADRANGLE  
MANUFACTURING CO.**  
30 So. Peoria St. - - Chicago, Ill.

# QUAD

LIGHTING UNITS

so conclude that it is a requirement of the fire department rather than the Underwriters and would appreciate your advising us whom to get in touch with to determine whether this is still a requirement.

The New York City Bureau of Fire Prevention which formerly was part of the fire department, now operates under the jurisdiction of the building department. This bureau requires that on bulk gasoline stations the motors driving pumps to deliver gasoline to the loading platforms be provided with a manually operable switch, an electrically operated (remote control) switch, and a fusible link switch.

This latter switch may be of any type which will be opened when a fusible link which will melt in case of fire, will start an action causing the switch to open. The "sashweight" arrangement mentioned by our correspondent is one arrangement of the fusible link type which will meet the requirements.

The regular electrical inspection bureau of the City of New York under the Department of Water Supply, Gas and Electricity, does not have such a requirement nor does the National Electrical Code require such an arrangement.

On the other hand there is nothing in the Code to prevent using the fusible link and sash weight and it seems to be a very desirous safety measure.

### PROTECTION OF SMALL MOTORS WHEN GROUNDED

*Are the individual motors of a group of small motors properly protected by the 25 amp. fuses of an appliance branch circuit?*

As field experience has taught us that certain types of small motors are not protected by the 15 amp. fuses of ordinary branch circuits our first reaction to the above question is to say that they are not.

However, rule 808-c, exception 2, says that "two or small motors . . . shall be considered as being sufficiently protected . . . by the 25 amp. over-current devices of the appliance circuit described in Section 2006, of Article 20." Note in that paragraph that there must be at least two motors under the protection of the protective devices and then it will be realized that with more than one motor in operation on the circuit each

(Continued on page 36)

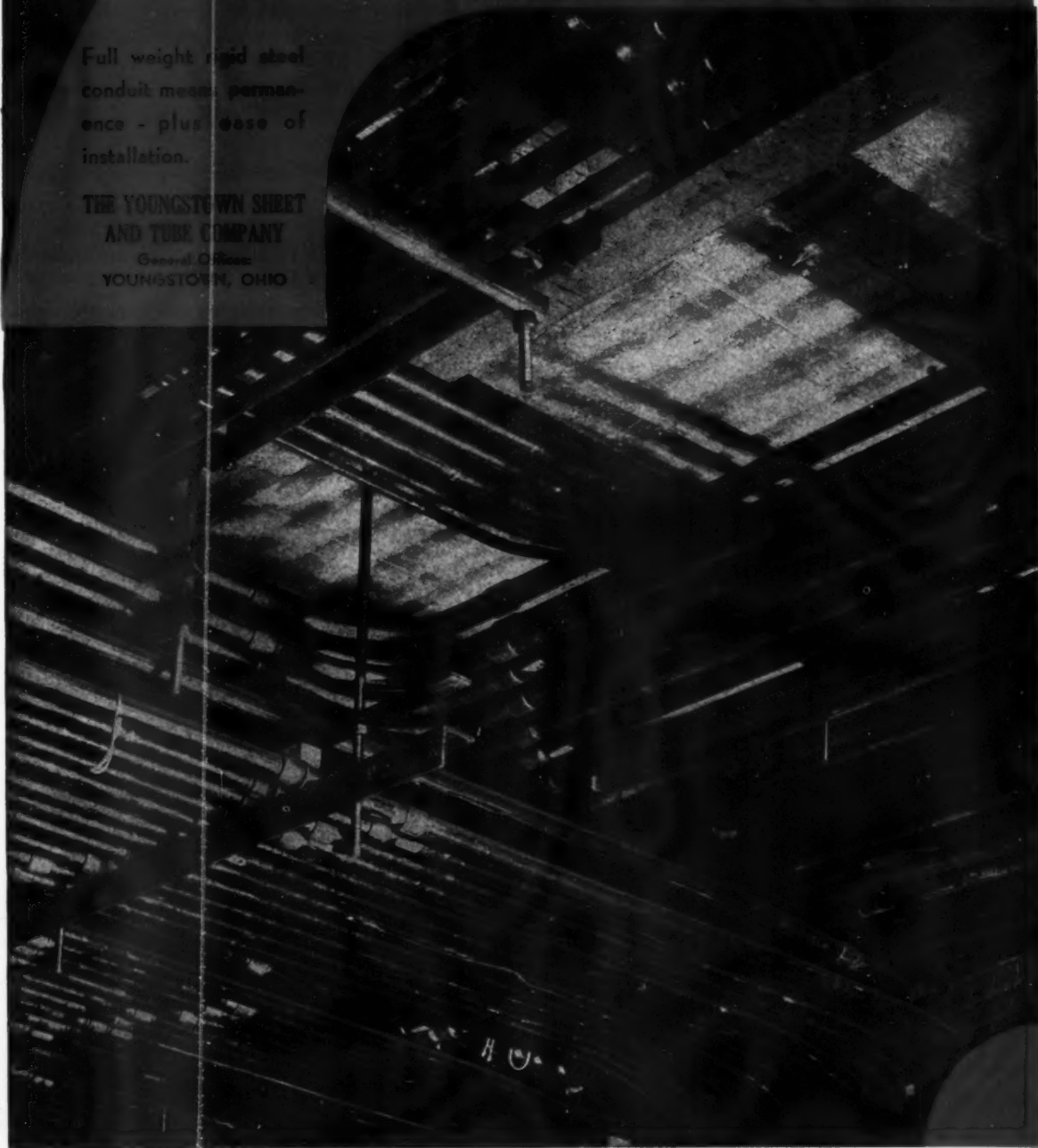
# Youngstown

## Buckeye CONDUIT

BLACK ENAMELED ELECTRO OR HOT DIPPED GALVANIZED

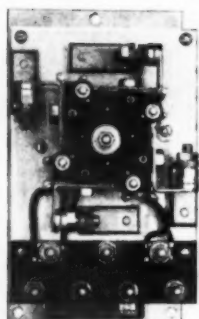
Full weight rigid steel  
conduit means perman-  
ence - plus ease of  
installation.

THE YOUNGSTOWN SHEET  
AND TUBE COMPANY  
General Office:  
YOUNGSTOWN, OHIO

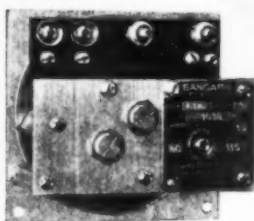




# A Complete Line of and Flashers



①



②



③



1. Model 2 "Chaser" flashers—small and compact. Designed so that they may be installed inside sign, reducing installation cost. Pure silver contacts which will not pit or stick.
2. Model 3 "off and on" flasher fills the need for a small, inexpensive but dependable flasher. Silver contacts. Operates in any position. Ideal for small signs.
3. Type TC. Electrically wound—full jeweled escapement—for either alternating or direct current.
4. Type TW. Moderately priced, direct current Time-Switch.
5. Form VS. Synchronously motored—equipped with omitting device—for controlling sign or window lighting.
6. Form VW. Electrically wound with 10 hours reserve, and omitting device—for controlling sign or window lighting.
7. Form VSO. VS Switch for outdoor installation—supplied with or without window.
8. Type TCO. TC Switch for outdoor installation—supplied with or without window.
9. Type TCZ. Equipped with "astronomic" dial—for sign or window lighting.
10. Form VSZ. Equipped with "astronomic" dial—for sign or window lighting.
11. Form VS-21 Time-Switch and Form 6144 Flasher. A convenient combination consisting of any of the various models of flashers with either Form VS or VW Time-Switch to produce any flashing effect or time-switch control desired.
12. Type K. Synchronously motored—supplied with or without window—for controlling sign or window lighting.



④



⑤



⑥



# SANGAMO Time-Switches Is Available

**S**ANGAMO has anticipated any and all of your time control and flasher problems with this complete line of time-switches and flashers.

The various types of time-switches are supplied in numerous combinations of switching arrangements.

Type K and Form VS Time-Switches are operated by synchronous motors.

Form VW is electrically wound with ten hours reserve, using small-gap mechanical contacts that have proven exceptionally satisfactory.

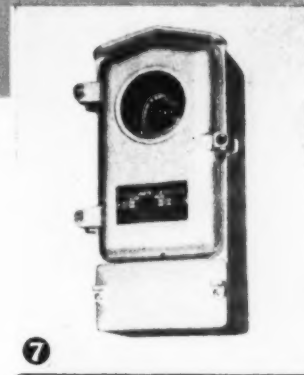
Type T is electrically wound and is equipped with a full jeweled Hamilton escapement providing 20 hours reserve. These are designed for extreme precision.

SANGAMO motor driven sign flashers are designed to control any flashing effect desired. They are dependable and trouble free.

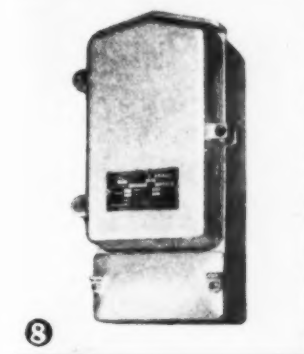
They have pure silver contacts—large current capacity—slow speed induction disc motors—simple speed adjustment—quiet operation—all parts interchangeable—operate in any position—require no lubrication—fully guaranteed.

*Ask your wholesaler for Sangamo Time-Switches and Flashers—  
There's a Sangamo wholesaler in every distribution center.*

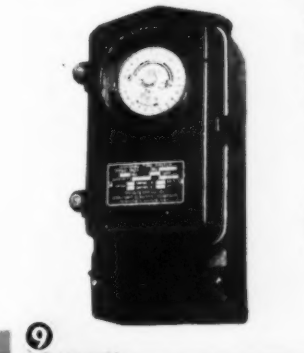
**SANGAMO ELECTRIC COMPANY  
SPRINGFIELD, ILLINOIS**



7



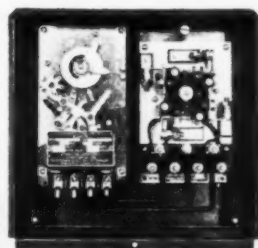
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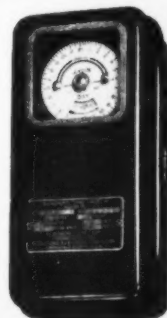
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12



11



10



# *Twin Cities* WIRED WITH ELECTRIC



There is an unmistakable trend among the designers of fine buildings toward the use of electrical metallic tubing for conduit wiring up to 2-inch.

This trend is justified, because it is based on common sense—on economy—on ease of installation—on adequate electrical and mechanical protection. Because of these reasons, it has been used in many Federal Buildings throughout the country, including the Minneapolis and St. Paul Post Office Buildings illustrated.

When considering electrical metallic tubing, remember that ELECTRUNITE STEELTUBES has every advantage—every feature you would ask a manufacturer to build into it. It cuts and bends easily. It requires no threading—three simple fittings adapt it to every installation. And on the inside surface are thousands of tiny



*Knurled inside finish available in 3/8", 1/2" and 1" sizes.*

## ELECTRUNITE

REG. U. S. PATENT OFFICE

# POST OFFICES METALLIC TUBING



knobs that cut down friction with the wire and make actual wire pulling approximately 30 per cent easier.

Your Supply House now has in stock ELECTRUNITE STEELTUBES with the new inside surface, or can get it quickly. Try it on your next job and let its performance speak for itself.

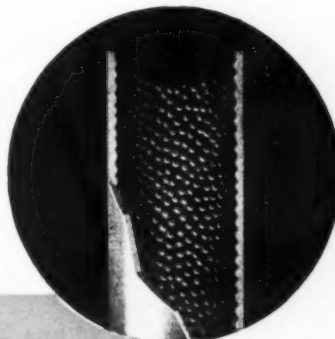
*Electrical Division*

**STEEL AND TUBES, INC.**

WORLD'S LARGEST PRODUCER OF ELECTRICALLY WELDED TUBING

CLEVELAND • • • OHIO

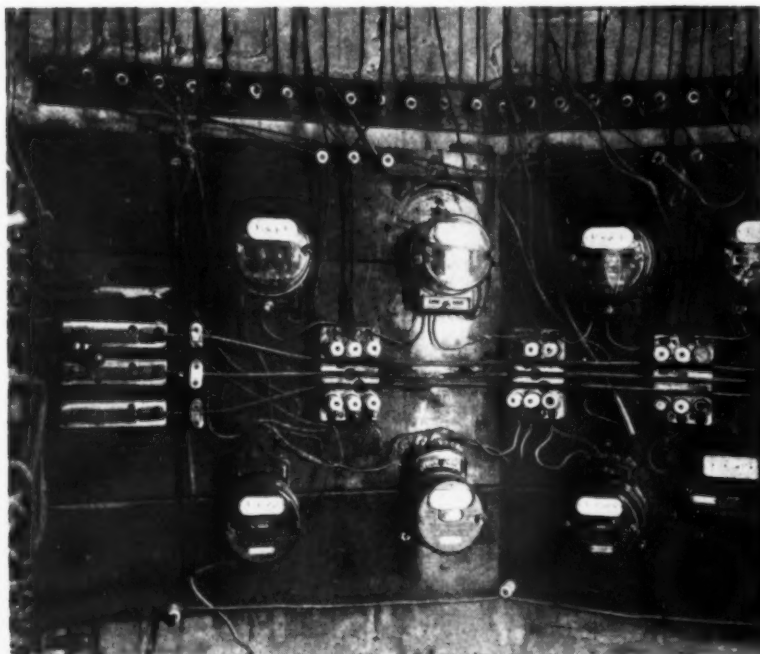
A UNIT OF REPUBLIC STEEL CORPORATION



Patent No. 1,962,876

# Steeltubes





## *Modernize* the obsolete unsafe services with **WADSWORTH SWITCHES**

**W**ADSWORTH Switches and Distribution Panels are designed and built to help you in this—March of Progress—to eliminate obsolete installations.

Then too—the many time saving features—ample space—easy accessible wiring facilities—ample supply of "Ring-Cut" Knockouts, will help much to eliminate disagreeable work and trouble.

### LIGHTING EQUIPMENT

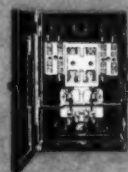
#### "D-tech-O"

Adjustable Show  
Window Lighting  
Units

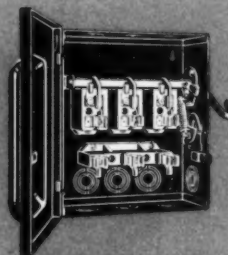
BETTER LIGHT

BETTER SIGHT

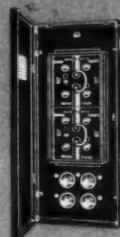
**The WADSWORTH ELECTRIC MFG. CO. INC.**  
Covington,  Kentucky.



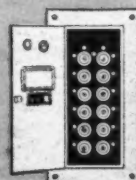
Accessible Fuse  
Motor Service Type



Industrial Type "A"  
Quick Make and  
Quick Break  
Interlocking Cover Control

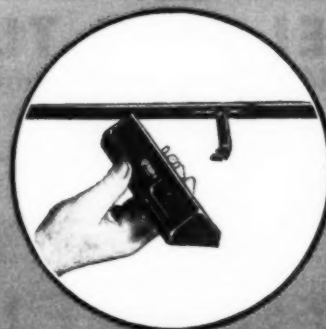


Service Equipment  
with Range and  
Lighting Circuits



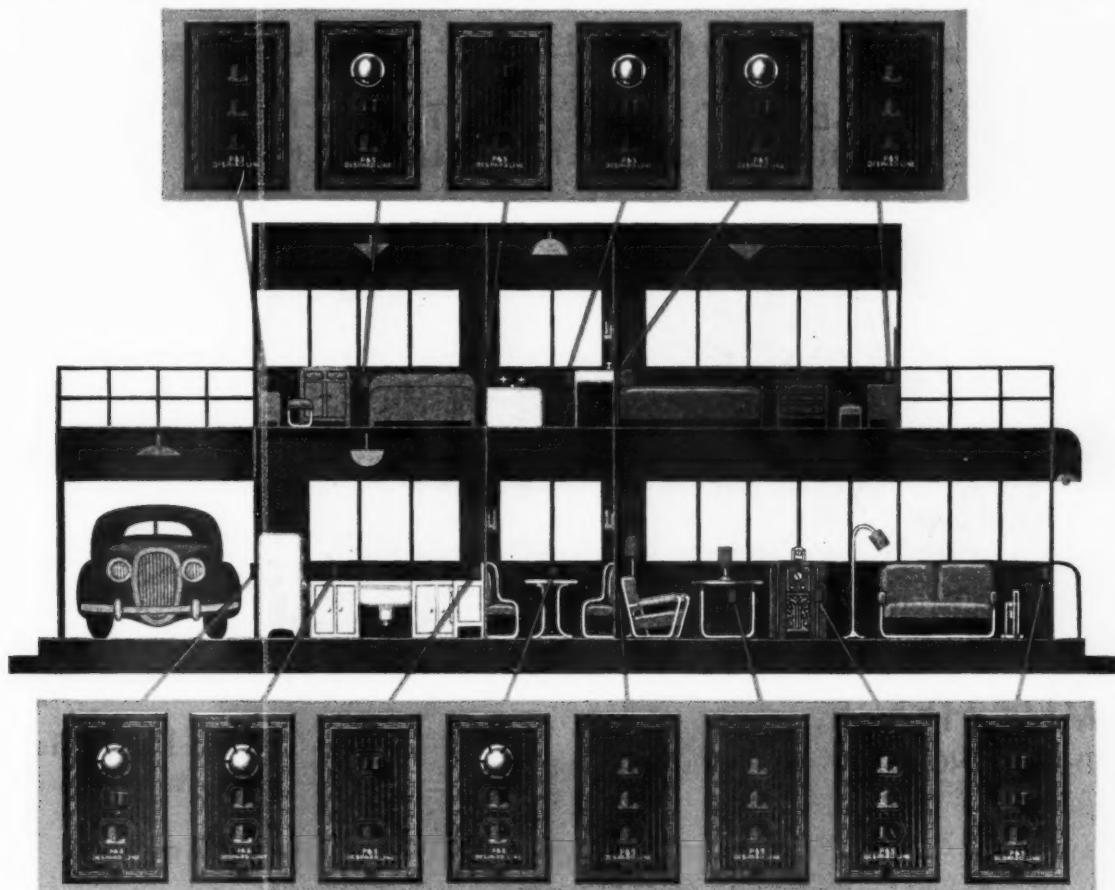
Enclosed Branch Circuit  
Cutout Finish Mounting  
Type

#### "D-tech-O"



For Display Cabinets

# GO MODERN *with-*



## *the* P&S-DESPARD LINE

- Announcement of the Government's great housing program again re-opens two major markets to both contractor and jobber—modernization work and new building.
- To properly service the many time-saving electrical appliances that will of necessity go into these homes, an adequate wiring system will be needed—old time wiring methods will be scrapped—new modern materials will be given preference.
- Get the facts now on the P&S-DESPARD LINE and be prepared to meet competitive bids with a better and more modern product.

**PASS & SEYMOUR, INC.**

**SOLVAY STATION**

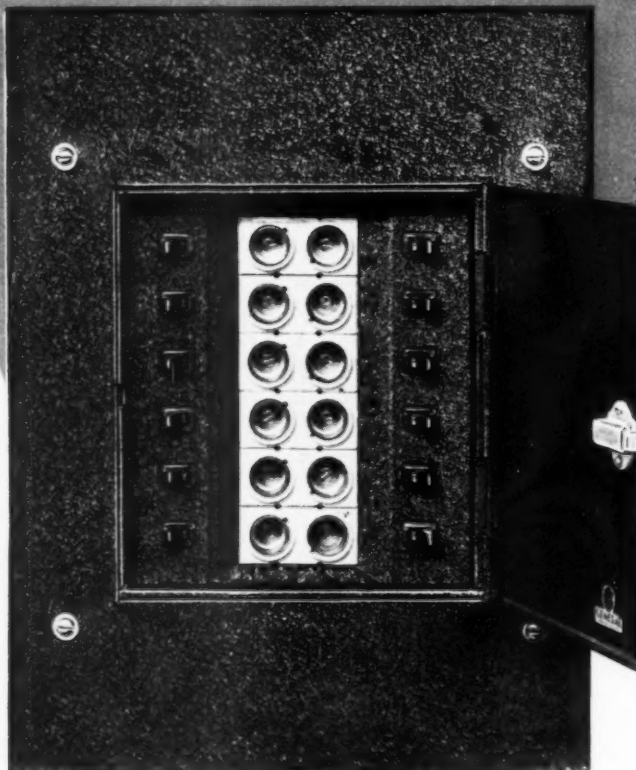
**SYRACUSE, N. Y.**

# ECONOMITE

ECONOMICAL AND SMALL

PANEL-BOARDS FOR LIGHTING CIRCUITS  
RADICALLY DIFFERENT ♦ ENTIRELY NEW

Equipped with  
**P & S**  
**DESPARD**  
**SWITCHES**  
IN THE BRANCHES



Simplified  
Installation  
Improved  
Wiring  
Facilities

The ECONOMITE line of panelboards were designed to meet the needs of contractors who wanted a complete panel with quality switches built in at the factory which could be sold at a much lower price in comparison with anything available at the present time.

ECONOMITE panels come to you complete and ready to install in sizes ranging from 4 to 40 ckt.

**COMMERCIAL CONTROL & DEVICE CORPORATION**  
45 ROEBLING STREET  
BROOKLYN, NEW YORK

MANUFACTURERS OF



ELECTRICAL CONTROLS

Commercial Control & Device Corp.  
45 Roebling St., Brooklyn, N. Y.

Gentlemen: Please send me information on your equipment.

Name .....

Street .....

City..... State.....

Safety Switches  
Switchboards  
Metering Equipment  
Panelettes  
Panelboards  
Dead Front Lighting Panels



# Check *your wiring needs against* H&H Timesaver

memo  
here

For plug outlet  
in addition to  
switch —



TL-15

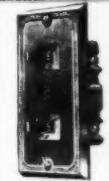
**SWITCH and PLUG OUTLET**

## Line

TL

TL-11

For overhead  
and bracket  
light —



**2 SWITCHES IN 1**

TL-111

For hallway to  
control 3 groups  
of lights —



**3 SWITCHES IN 1**

TL-61

For cellar or  
closet lights,  
with warning —



**WARNING LIGHT and SWITCH**

TL-555

For extra outlet  
additional to  
regular duplex —



**3 OUTLET RECEPTACLE**

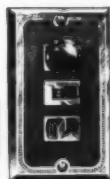


For electric iron or  
appliance outlet with  
warning light —

**WARNING LIGHT and PLUG OUTLET**

memo  
here

TL-67



For kitchens, laundries,  
etc. for appliance with  
warning light and switch —

**WARNING LIGHT, SWITCH and PLUG OUTLET**

TL-617



For Type C and ordinary  
lamp loads — economical  
and easy to install —

**BAKELITE BASE, ENCLOSED TUMBLER SWITCH**

TL-1

Here are Switch, Receptacle and Pilot Light Combinations for every convenience in wiring. Assembled in just the arrangements you need — in small Bakelite bases with ample wiring-room . . . Check over the devices above, in connection with the requirements of your next job. Make this page your Memo Order-Sheet. . . Write for 4-page data-bulletin showing the T-L Line complete for every requirement.

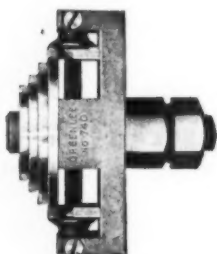
## HART & HEGEMAN DIVISION

THE ARROW-HART & HEGEMAN ELECTRIC CO. HARTFORD, CONN.

# Old fashioned tools need *Replacement just as much as* old fashioned wiring . . .



Greenlee Knockout Punch.  
Made in sizes for enlarging holes for 1/2" to 2" conduit.



Greenlee Knockout Cutter.  
This tool will make enlargements for 1 1/2" to 3" conduit.

The modern method of enlarging holes for conduit in switch cabinets, outlet boxes, etc., is to use the Greenlee Knockout Tools shown above. By means of them the laborious and time-consuming operations of drilling, filing and reaming are eliminated. They make clean, round holes quickly and easily and are convenient to operate in close quarters.

The tools used on a job may not make any difference to your customer, providing the work is first class and the price right, but it does make a difference to you. It may mean the difference between getting a job and losing it, and if you do get it, it may mean the difference between a profit and a loss.

When it comes to bending conduit, the modern, economical way is to use a Green-

lee Hydraulic Bender. It will bend it faster and easier than by other methods; it will make smooth, even bends; and it will make it easier to pull in wire and cable. In addition, it saves buying many manufactured bends and fittings.



Above: Greenlee Rigid Conduit Bender. Built in two sizes for bending from 1 1/4" to 3" conduit and from 2 1/2" to 4 1/2" conduit. They are portable and are convenient to operate.

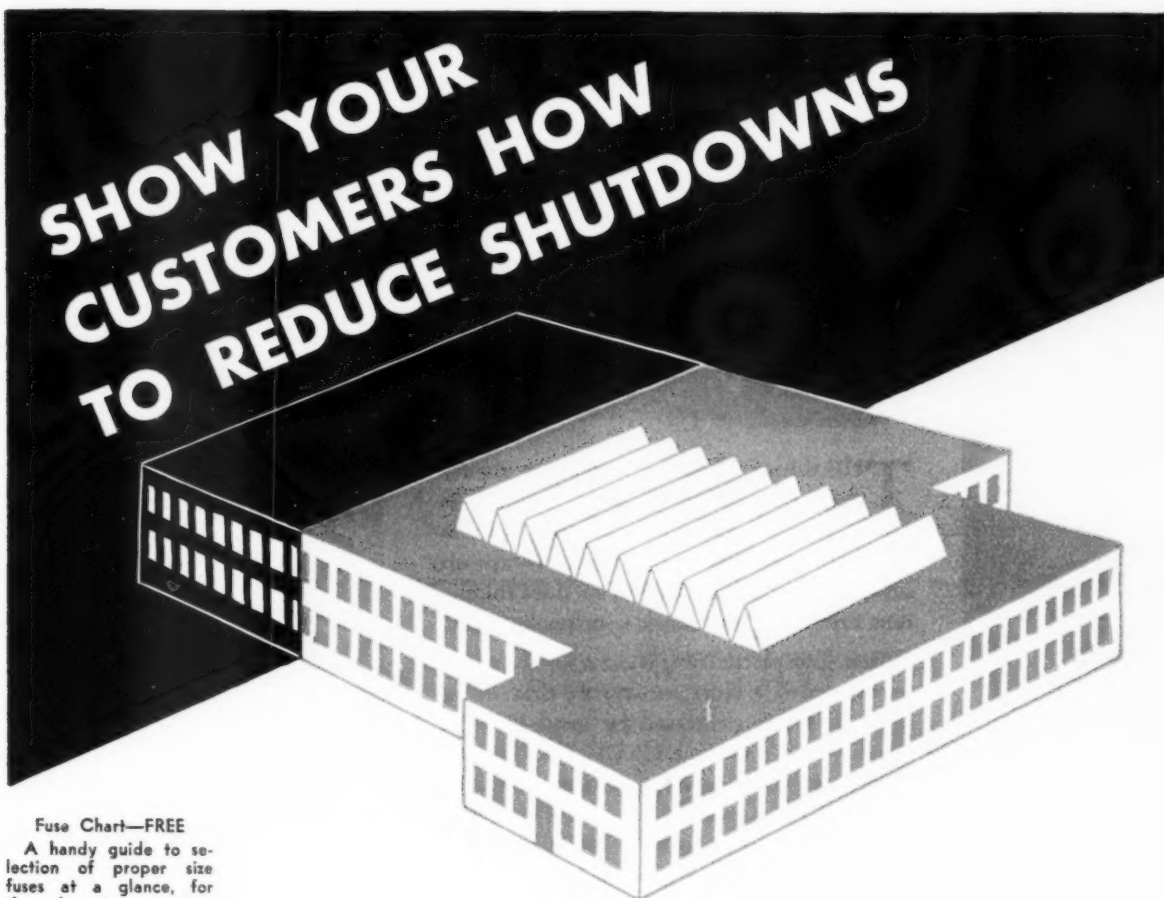


Greenlee Conduit Bender with Attachments for bending thin-wall steel conduit in sizes from 1 1/4" to 2". Makes smooth, even bends.

Joist Borers  
Electrician Bits  
Bit Extensions

**Greenlee**  
TOOL CO. ESTABLISHED 1890  
ROCKFORD, ILLINOIS, U.S.A.

Conduit Benders  
Knockout Tools  
Pipe Pushers



#### Fuse Chart—FREE

A handy guide to selection of proper size fuses at a glance, for the adequate protection of motors. Ask for Fuse Chart No. 18.



The secret of Jefferson Super-Lag performance lies in the lag plate which is a part of the Super-Lag link. This plate delays the normal fuse action, provides a time interval or lag. This time-lag prevents the fuse from blowing on harmless temporary overloads—saves needless shutdowns and link replacements.

## JEFFERSON Super-Lag Fuses Eliminate Needless Motor Shutdowns

Part of every factory is STOPPED every week. Some of the lost time is unavoidable but too much of it is needless. Increase your fuse sales by pointing out this way of reducing shutdowns.

Jefferson Super-Lag Renewable Fuses provide reliable accurate protection—riding over harmless, momentary surges,—operating positively on extended, dangerous overloads. There is no better protection for electrical equipment and property,—and no better way of preventing needless production delays.

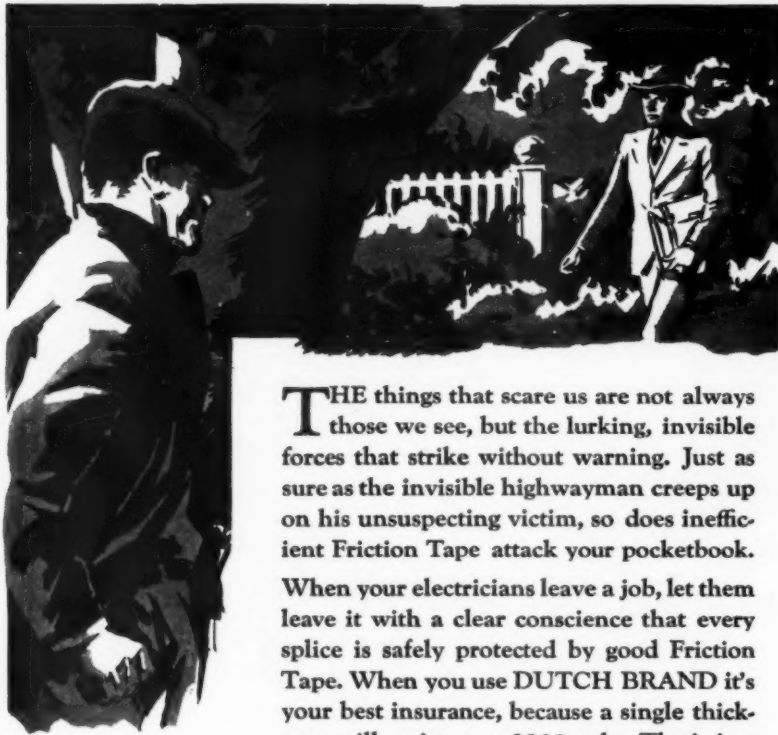
The percentage of needless motor shutdowns and production delays decreases radically when Jefferson Super-Lags are used. Made in all capacities—knife-blade and ferrule types.

JEFFERSON ELECTRIC COMPANY  
Bellwood (Suburb of Chicago) Illinois

**JEFFERSON**  
*Super-Lag*  
RENEWABLE **FUSES**



## THE ENEMY OF SAFETY



**T**HE things that scare us are not always those we see, but the lurking, invisible forces that strike without warning. Just as sure as the invisible highwayman creeps up on his unsuspecting victim, so does inefficient Friction Tape attack your pocketbook.

When your electricians leave a job, let them leave it with a clear conscience that every splice is safely protected by good Friction Tape. When you use DUTCH BRAND it's your best insurance, because a single thickness will resist over 2200 volts. That's just one of the reasons why DUTCH BRAND is known as the "Extra Service" product.

Learn about DUTCH BRAND'S other qualities too, by writing us on your firm letterhead for a free test roll.

DUTCH BRAND Friction Tape, Rubber Tape and Soldering Paste are sold by electrical jobbers everywhere.

**VAN CLEEF BROS.** Est. 1910

Manufacturers Friction and Rubber Tape and Soldering Paste  
Woodlawn Ave., 77th to 78th Streets, Chicago, U. S. A.

**DUTCH BRAND  
SOLDERING  
PASTE**

A scientific mixture—non-corrosive. Cleans as it works. Holds solder fast. Less paste required per job.

**THE JUMBO PACKAGE**  
Contains 10 standard No. 8 rolls. The economical way for repairmen, electrical contractors and industrial users to purchase Friction Tape, where individually cartoned Tape is not required.



**DUTCH BRAND  
RUBBER INSULATING  
TAPE**

Fuses instantly without heat. Molds into one solid piece. It stretches without breaking because it contains more live, new rubber.



This Dispenser will increase your retail sales over 100%. It will sell Tape to people who had no intention of buying.

See the DUTCH BRAND EXHIBIT at A CENTURY of PROGRESS-CHICAGO-1934

(Continued from page 24)

motor is better protected than if each motor was individually protected by a 25 amp. fuse.

It should be remembered that no motor of such a group can have a rating of over 6 amp. and that if the motors are grouped on a 15 amp. branch circuit the conductors shall not be smaller than No. 14 and the protective device can not exceed 15 amp. Also, if the motors are on an appliance circuit using No. 12 wire, the protective device shall not exceed 20 amp., and if No. 10 or larger wire is used the protective devices shall not be larger than 25 amp.

It is not to be recommended that automatically operated motors such as for refrigerators, oil burners, etc., be protected by protective devices in excess of 125 per cent of their full load rating. There are protective devices now on the market which will give adequate running protection for such small motors and which will allow sufficient current for starting.



### HALF CENTURY OF INDUSTRY SERVICE:—

In commemoration of his 50 years' industry service, David T. Wadsworth was surprised by his friends on the evening of September 10. The Northern Kentucky Electric Club chose as their most fitting occasion a dinner-dance given at the Lookout House, Fort Mitchell, Ky., for the Western Section I.A.E.I. Cincinnati meeting, for which Mr. Wadsworth was convention chairman. A bronze plaque was presented Mr. Wadsworth which bore his bust likeness and the raised inscription "Dedicated to David T. Wadsworth for devoting fifty years of his life improving the electrical standards of the nation—presented by the Northern Kentucky Electric Club—1934." Mr. Wadsworth is vice-president and chief engineer of the Wadsworth Electric & Manufacturing Co. of Covington, Ky., a member of I.A.E.I., an ex-electrical inspector of the Kentucky Actuarial Bureau and also had engaged in the electrical contracting business in Kentucky and Ohio during his half century of industry service.

---

**\*They said: It's a "Honey!"**

**\*\*He says: It's a "Pinch Hitter!"**

Others say: "It sells the job!" "Makes customers happy!" "Like to work with it!" "Neat!" "Very handy!" "Fits ALL surface conditions!" "Best ever!" Etc., etc., etc....

**But THE MAIN IDEA is the SAME!**

---

★ Many contractors have used this phrase!

★★ A Manchester, Mass., contractor uses this expression.

The fact is that MIDGET is rapidly supplying a "long felt want" in the industry!

The fact is that THOUSANDS of contractors are writing us. They say that MIDGET is solving many problems, opening up new fields and making money for them in many ways!

*You will like MIDGET because it has the well-known WIREMOLD CHARACTERISTICS—neatness, versatility, permanence and ease of installation.*

THE WIREMOLD CO., Hartford, Conn.

---

**MIDGET is a smaller size Wiremold**

*It EXTENDS the Wiremold Zone of Usefulness into new fields!*

---

# CONTRACTING news

INFORMATION OF INTEREST TO ELECTRICAL CONTRACTORS  
CONSISTING OF ITEMS OF NEWS, SHORT ARTICLES, PRACTICAL  
IDEAS, ETC., OUR READERS ARE INVITED TO CONTRIBUTE TO  
THIS DEPARTMENT

## MICHIGAN CITIES ADOPT UNIFORM REVISION OF SPECIAL RULES

Cities representing 75 percent of Michigan's total population are reported as having adopted a uniform revision of their municipal special electrical rules. Twelve adjacent municipalities have cooperated with Detroit in this work, as well as numerous outlying cities, with others expected to join later. It was found that 2900 duplications of special rules existed throughout the state, while Detroit reduced its 200 special rules to 67 under this revision. The widespread uniformity brought about through this work is expected to greatly simplify matters for electrical contractors and wholesalers operating over the state of Michigan.

## WHOLESALE'S CODE ADOPTED

The electrical wholesaling industry now has its own code, which is a supplement to the basic wholesale code of N.R.A. It became effective August 23, 1934. A summary of this new code by E. D. Tolles, managing director of NEWA, includes the following trade practice provisions: Lump sum bidding is not permitted; quotations must show the price of each item; split shipment discounts must be computed on the basis of quantities shipped and/or billed to a single buyer at one time; free deliveries are limited to within such metropolitan area as will be defined through the Code Authority, with equalized transportation charges to be established as between recognized wholesaling centers; consignments are limited to products which are distributed by manufacturers for wholesaler-to-customer consignment; re-

turned goods are only acceptable within 60 days, then only with a service charge if supplied without fault of wholesaler or manufacturer; a cost discount time limit to the tenth of month following shipment, and not greater than that allowed by the manufacturer of the product; the cost of sales promotional material furnished by the manufacturer through the wholesaler to the dealer must not be absorbed.

## Code Authority News

### HELPER RATIO

The Electrical Contractors' Code Authority at its last meeting adopted following explanation of skilled worker ratio provision: "The question has been asked whether a member of the industry who does manual labor himself may employ wage earners other than as specified in Section 3, Article 2, Chapter 6.

"Explanation: A member of the industry who does manual labor himself is bound by the provisions of Section 3 the same as any member of the industry who does not do manual labor which means that when it is necessary for him to employ wage earners he must first employ a skilled worker before he can employ unskilled workers in the ratio provided for in Section 3, Article 2 of Chapter 6."

### CODE COMPLIANCE ON F.H.A. WORK

Information has been obtained as to the policy of the Federal Housing Administration concerning compliance with the Construction Code.

Since the housing administration does not make direct loans to home owners, it cannot require that members of the construction industry performing modernization work for home owners shall file certificates of compliance, nor does it feel that it can compel the lending institutions to require such certification, since the loans are "character" loans and not secured by the property on which the physical improvements are made. However, work performed by members of the construction industry is governed by the Construction Code and home owners may require such a certificate of compliance at their option.

## FIRE PREVENTION WEEK

October 7 to 13 is again the occasion of Annual Fire Prevention Week. For this occasion the various safety councils and fire departments have worked out programs and demonstrations in cooperation with school children for demonstrations in fire prevention work. In a number of communities this is the annual fire department check-up of fire hazards which include some form of electrical reinspection.

## THE PROPOSED UTILITY N. E. CODE

A proposed revision of the National Electrical Code, based on the text of the 1933 edition, is now in the printed form in which it will be submitted to the Electrical Committee of N.F.P.A. in March, 1935, by the electric light and power group.

The utility industry has attempted to revise the present Code into two parts, first a set of basic rules for general application, and second, a manual for inspectors, to contain the details of application of the Code rules. This represents a departure from the form and topical sequence of the existing Code.

The proposed Code of fundamentals attempts the deletion of all minor or subordinate rules and the rewording of present basic rules so as to state only the fundamental considerations upon which rules or groups of rules are based. Thus, this first section is stripped of all detailed manufacturing standards or specifications, wherein a properly worded reference to such standards will suffice. Likewise, from the suggested manual for inspectors is deleted similar details which are considered superfluous Code material, and which can be referred to as a part of a suggested set of manufacturing standards.

The first part consists of four major divisions, some of which are again subdivided into subdivisional groups, but all bearing a series of consecutive article numbers entirely different from the present Code article numbering sequence. The second part is subdivided similarly to the first, in order that cross-reference from the basic rules to the detailed rules of application contained in the suggested manual for inspectors may be readily accomplished.

Despite making reference only to the inclusion of certain existing Code provisions, rather than their verbatim

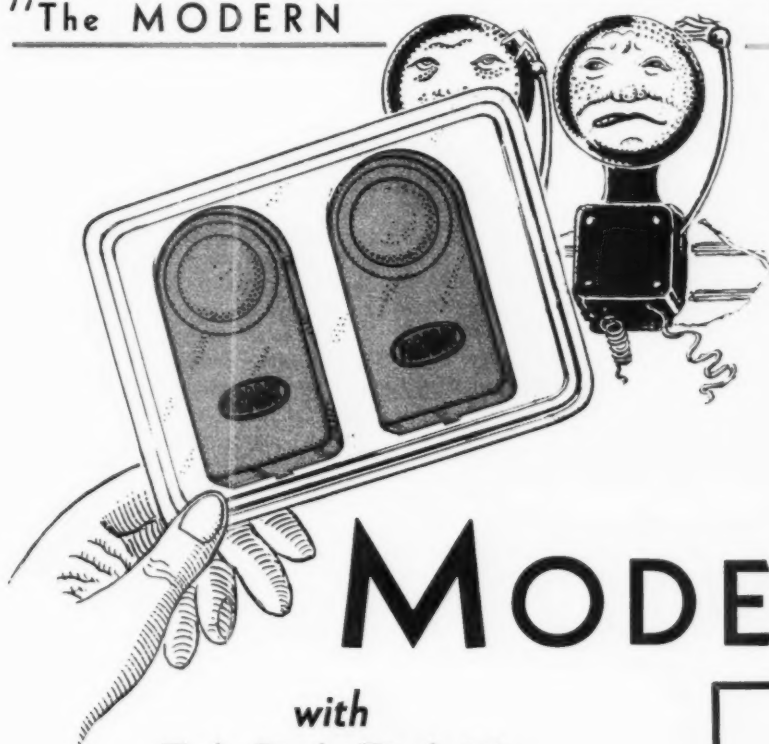






"The MODERN

ELECTRIC BELL"



20,000,000 homes are potential prospects—right now—for FARADAY RESIDENCE CALL PANELS in your modernization sales-campaign; you don't have to wait for new homes to be built. FARADAY RESIDENCE CALL PANELS can be sold to every home already built!

# MODERNIZE

with

FARADAY

## Residence Call Panels

ON all your home modernization and repair work, don't fail to bring the FARADAY RESIDENCE CALL PANEL to the attention of your customers and prospects, and get the additional business available for you *right now!*

FARADAY RESIDENCE CALL PANELS are the latest development for bell and buzzer work in the home—they completely do away with the "eye-sores" which were always objectionable in a hall or kitchen of every home.

Because of the attractive design and color combinations of the FARADAY RESIDENCE CALL PANEL, completely concealing all wires, screws, broken plaster, mechanisms, etc., they attract every woman, and are very easy to sell—in fact they will readily become a leader in your modernization activities!

Standard colors of the bells and buzzers are Jade-Green, Blue and Ivory; panels are Ivory, although special color combinations for both will be furnished to order.

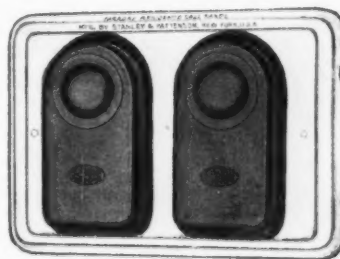
A very small stock affords every combination of signals and of colors. We suggest ordering from your jobber the attractive Counter Display Easel No. 829 with Two-Unit Residence Call Panel mounted on the same—this will enable you to show prospective customers the attractive features of the "MODERN ELECTRIC BELL."

Sold by all Wholesalers—Write for Bulletin 61-A

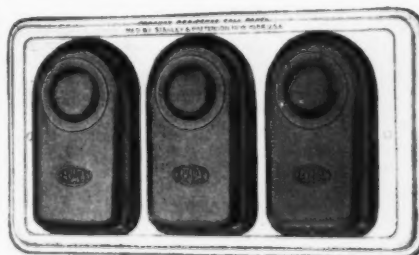
**STANLEY & PATTERSON, INC.**  
150 VARICK ST. NEW YORK, U.S.A.



One Unit (Small)  
Panel



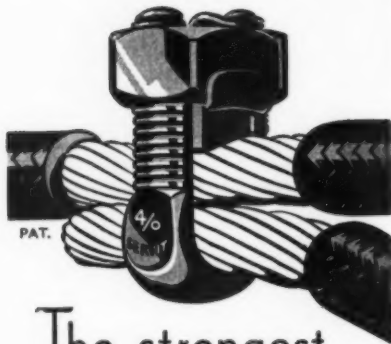
Two Unit (Medium)  
Panel



Three Unit (Large)  
Panel



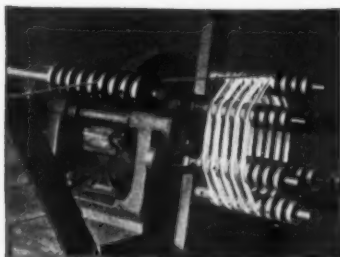
## BURNDY SERVIT



The strongest  
service tap  
... now made of *DURIUM*

**BURNDY**  
ENGINEERING CO., INC.  
305 EAST 45TH STREET, NEW YORK  
*Agents Everywhere*

## better . . . IDEAL COIL WINDER HEAD



### INEXPENSIVE-ADJUSTABLE

Quickly set for diamond or mesh, loops, round, square or rectangular coils of various size. Eliminates cost and delay of making special forms for each size or type of coil required. Particularly adapted for from 1 to 50 HP. motors—maintenance or production work. Speed operation—set of 48 diamond coils made in from 30 to 45 minutes, typical. No solid side walls—coil may be tape laced while still on head. Face plate fits any lathe head or other turning device. Mail the coupon today for 10-DAY FREE TRIAL or literature.

**IDEAL COMMUTATOR DRESSER CO.**  
1041 Park Avenue, Sycamore, Ill.

Gentlemen: Please send us  
☐ IDEAL Coil Winder Head on 10-day Trial  
☐ Literature and low prices

Name .....

Address .....

City..... State..... (1034)

reproduction in the utility's proposed Code, their arrangement comprises 38 pages of small print, bound in 8½ inch by 11½ inch booklet form, with several additional pages devoted to their introduction, and an index of contents. An index of Code omissions suggested for incorporation in separate materials standards, lists approximately 112 paragraphs omitted in whole or in part.

It is claimed in submitting this revised Code that it was intended to effect the revision of the 1933 Code without making any change in its provisions, so that the effect of applying this new form should be the same as though the requirements of the existing Code were applied.

### UNDERWRITERS' LABEL SERVICE EXTENDED TO PLUG FUSES

Underwriters' Laboratories approved plug fuses are to bear individual labels according to a recent announcement from that organization. Heretofore plug fuses have been inspected and listed under re-examina-

tion service classification, which service is to be discontinued January 1, 1935.

### INSPECTOR MEETING REFLECTS INDUSTRY PROGRESS

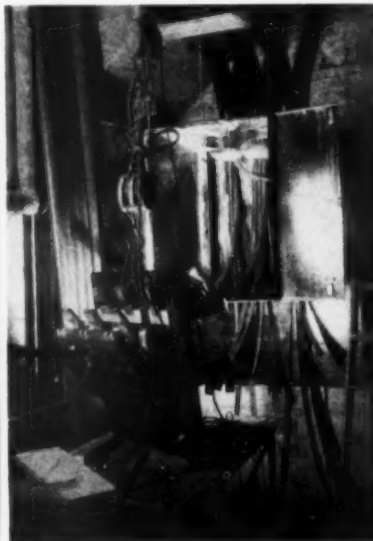
Expressions of optimism regarding a coordinated electrical industry's future progress were sounded by various speakers appearing before the thirtieth annual convention of the Western Section, I.A.I.E., at Cincinnati, Ohio, on September 10 to 13. Greater values than heretofore known were predicted for domestic consumers, requiring immense quantities of safe wiring facilities to replace inadequate and obsolete equipment now in use. A combined effort of the entire industry for educational and selling effort is expected to bring the public to a higher point of safe uninterrupted use of new electrical services.

Utility messages to the convention charged the industry with a new responsibility in selling a wide market for increased load made available as a result of rate reductions. Inspectors were reminded of their obligation to render a public service in maintaining safe standards consistent with economical methods. A suggested revised N.E.C. from the utility viewpoint was presented to the meeting in tentative form.

L. E. Mayer, chairman of the Electrical Contractors' Code Authority, emphasized the opportunity of electrical inspectors to render a constructive service in the enforcement of the NRA Code, since non-compliance with N.E.C. represented a violation of the NRA. The inspector is free to report to local Code administrative committees any violations, Mr. Mayer stated, and further predicted a better future industry condition as a result of the close cooperation of all-industry groups in their uniform efforts to safeguard life and property with adequate wiring, and by the discouragement of unauthorized work by other than contractors.

### GUY WETHERBEE

Guy Wetherbee, president of the Wetherbee Electric Company, Oklahoma City, Okla., died on August 10. Resolutions of condolence were adopted by the Oklahoma City Chapter, N.E.C.A. and sent to the family and press.



**INSTALLS LARGE CIRCUIT BREAKER:** In modernizing a large local chain store the Bertke Electric Co., Cincinnati, Ohio, replaced the overloaded 800 amp. service equipment with an 1800 amp. enclosed automatic air circuit breaker, to protect a new set of 3-phase 4-wire service conductors. The photograph was taken just as the large breaker was made ready for mounting within its 26 in. wide, 36 in. high, 42-in. deep No. 10 gauge steel enclosing cabinet. Three 4½-in. service conduits are racked on ceiling above service cabinet, each containing three 900,000 c.m. and one 600,000 c.m. service conductor for multiple operation. Wiring for a 150 h.p. compressor motor was also a part of this modernization contract.



*An old company offers you*

# A NEW PRODUCT

When a firm like Jenkins Bros. that has been in business for 70 years, turns out a new product—that product simply has to be good.

Jenkins Bros. have a reputation for high quality to maintain. This fact is your best assurance of the outstanding merit and reliability of **GOLD SEAL Friction Tape** and **GOLD SEAL Splicing Compound**.

Here are quality products at competitive prices . . . produced by men who are experts in rubber and who are trained to get the most out of honest materials. Here are combined all the good points of the finest tapes and splicing compounds available anywhere.

The line is complete—from regular commercial friction tapes and splicing compounds, to materials that will meet the most exacting specifications.

Remember the name "**GOLD SEAL**"—and the distinctive red and green packages—you're going to hear a lot about them.

- *We want you to see and test these two new products for yourself. They are wrapped and sealed in Cellophane—will be marketed exclusively through the wholesale trade. Send us your name and address and we will gladly mail you a full-sized sample of each.*

**JENKINS BROS. RUBBER DIVISION BRIDGEPORT, CONN.**




# CUTLER HAMMER Safety Switches

**EXTREME  
COMPACTNESS  
AND  
VERY HIGH  
CAPACITY**

Cutler-Hammer pioneered the art of handling electric current, and today, whatever the amperage, the same background of leadership in current controlling devices guides C-H design and manufacture. Thus C-H Safety Switches are packed with superior features. The Universal Duty Bul. 4115 is an example. Patterned after heavy duty design, it has excellent electrical characteristics, yet it is unusually compact. In fact, the size of this switch is much smaller than you would expect of the customary type A switches.

Bul. 4115 has double arc-blanketed contacts with resulting high rupturing capacity suitable for handling frequent interruption of heavy currents—has individual unit poles; safety dead front construction—has self-aligning "U" blades with non-current-carrying hinge posts—has Thermoplas base instead of porcelain or slate—has torque spring mechanism with no dead points, and cadmium plated copper parts and mechanism. Bul. 4115 is also available in dust-tight and explosion-proof types.

Such value indicates the profit possibilities and user satisfaction in C-H Safety Switches. Alert independent electrical wholesalers stock the complete C-H Line. CUTLER-HAMMER, Inc., *Pioneer Manufacturers of Electric Control Apparatus*. 1306 St. Paul Ave., Milwaukee, Wisconsin. 

Cutler-Hammer Meter Service Switches, of types approved in most localities, are built to the same standards as C-H Safety Switches. Ask for catalog.

Top illustration: the Bul. 4115 Safety Switch. Also made in explosion-proof and dust-tight models. Explosion-proof model is shown above—for Class I, Group D locations (gasoline and alcohol fumes, etc.)—in non-fusible 30, 60, 100 and 200 ampere sizes, single and double throw, quick make and quick break . . . For dust and lint conditions, or for weather-proof installations, use the same switch in dust-tight, weather-proof type, at lesser cost . . . an enduringly protective weather-proof line, not made with perishable gaskets.



# A ROLL O' TAPE

ELECTRICAL FLASHES  
GATHERED AMONG THE  
BIG WIRE AND PIPE MEN

BY

ELECTRICAL CONTRACTING'S  
FIELD EDITORS

R. J. HEFFERNAN, Louisville, Ky., is rewarded for being a close student of Article 32 of the N.E.C., having received numerous distillery jobs as a result of his special knowledge of such work.

DETROIT'S inspection rulings require detailed plans and specifications to be submitted with application for electrical permits. These must show the outlets, wattages, circuits and feeders. All types of structures except residences housing four or less families are listed under the scope of this ruling.

RANGE campaign wiring at Wichita, Kans., is designed to minimize fuse tampering. The Kansas Gas & Electric Co.'s standard layout includes outdoor mounted enclosed type automatic overload main circuit breakers connected in multiple to one service for separate control of lighting and range sub-feeders. Reset levers are made accessible to customer.

VOLTAGE loss investigations pay dividends according to Arthur E. Bertke of the Bertke Electric Co., Cincinnati, Ohio, who recently completed a \$600 local store recircuiting and feeder job. His survey revealed that a recent higher-wattage fixture installation operated on inadequate copper at low efficiency. He got his job upon showing the owner that an adequate wiring system would be paid for in less than a year out of the operating economies effected.

CONVERTING to a complete underground distribution system at Fort Sam Houston, San Antonio, Tex., represented a modernization job of large proportions. One half of the job was let to S. C. Sachs, Inc., St. Louis for \$110,000. A 4,000-volt 4-wire primary underground



every length  
**UNIFORMLY**  
easy to bend . . .

Fretz-Moon Rigid Conduit bends with the same ease at any point in any length. Because it is made from soft, ductile steel, especially made to Fretz-Moon specifications, and then processed by the scientifically-controlled "continuous process," every bit of original ductility remains in the steel.

In this unique and exclusive method of manufacture, every foot of metal is heated to a definite temperature for the same length of time—not an inch is ever over or under heated. Hence, the extraordinarily high ductility of Fretz-Moon Conduit and a total absence of hard or "burnt" spots that might cause kinks in bending.

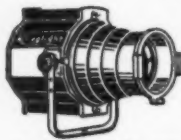
Comparative laboratory tests and the experience of contractors in the field prove that Fretz-Moon Rigid Conduit bends easier, more uniformly and perfectly without flattening or distortion at the bends. Contractors who give it a fair trial usually become constant users. Write for literature.

**STEEL AND TUBES, INC., CLEVELAND, OHIO**

EXCLUSIVE SALES AGENTS

**FRETZ-MOON**  
**RIGID CONDUIT**

## Outdoor FLOODLIGHTS of every description



No. 1166B — the new 1000/1500-watt Kliegl light for high intensity lighting of defined areas — beam can be shaped to conform with object or area illuminated.

KLIEGL floodlights are made in many different types and sizes so that you can readily obtain units best suited to your needs . . . whether for close-up or long-distance projection, with narrow or wide-spread beams; for lamps from 250- to 1500-watts. Of superior design and workmanship, Kliegl floodlights assure maximum illumination at minimum cost. Tell us your conditions, or specified demands, and we will help you get desired results most economically.

### CATALOG

Send for copy of our complete catalog, showing our floodlights and other lighting specialties.



No. 538 — wide-spread long-range 1000-watt flood for lighting large areas—parking grounds, filling stations, playgrounds, construction work, etc.



No. 565 — hanging 1000-watt floodlight, reflects all the light downward; for prize-light rings, etc.



No. 551 — underwater floodlight, 250/400-watt, rustproof water-tight construction, for swimming pools.



No. 1600 — close-range, wide-spread 500/1000-watt floodlight for lighting buildings, etc.



No. 1610 — long-range, concentrated-beam 1000-watt unit for floodlighting buildings, etc.

# KLIEGL BROS

UNIVERSAL ELECTRIC STAGE LIGHTING CO., INC.

*Theatrical · Decorative · Spectacular · Lighting*

321 West 50th Street • New York, N. Y.

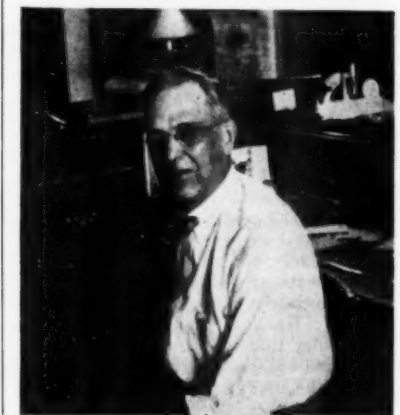
feeder network supplies subway type equipment in transformer manholes about the fort, from which parkway secondary service cables extend into the numerous structures. Transformers range in size from 5 to 50-kva., the larger transformers being housed in separate rooms within buildings.

REMOTE electrically controlled tear gas systems save 25 percent on jewelers' hold-up insurance rates, says A. J. Dunbar, electrical contractor of St. Louis, who is installing wiring for a 6-station low-voltage system in a downtown remodeling job.

THE record electrical job of Peoria, Ill., now nearing completion in what is claimed to be the world's largest distillery exhausted the supply of local electrical workers during the peak of building operations.

LEAGUE Secretary Hobbies — Jerry Weston of Electric & Radio Association, Kansas City, has an interesting collection of banquet and special group meeting photographs—40 in all, dating back to 1923. They are neatly arranged about the walls of the association's committee chambers.

CODE problems are given liberal time for discussion at the monthly meetings of the Electrical Clearing House of Louisville, Ky. Night meetings are held, which are attended by wholesalers, contractors, electrical workers, manufacturers' agents and utility men, numbering from 60 to 100 present. Special speakers are engaged to present educational industry problems at their gatherings.



EMPLOYS SOLICITORS: S. H. Findley, Minneapolis (Minn.) contractor employs two solicitors for contracting jobs who follow up commercial bulletins, building reports and industrial prospects. The contractor of today who waits for the world to beat a path through the woods to his door probably has a lot of time for fishing, Mr. Findley believes.

SIGNS • WINDOW LIGHTS • DEFROSTING • FURNACE CONTROL

MANUFACTURING PROCESSES • SIRENS • SUBURBAN STATIONS • NEON



**TORK  
CLOCK**

## NEW PRICES

By

## The Pioneers In Time Switch Popularity

GENTLEMEN: This is your magazine. We can talk confidentially as it has no consumer circulation. We have just published a new bulletin which shows many substantial price reductions. Here are a few of the popular models—write for complete Bulletin No. 495.

Synchronous Motor Driven or Hand Wound  
Simple and Reliable

Cat. No.	Poles	Amps. per Pole	Retail	Your Cost
1515	1	15	20.00	18.72
121	1	20	24.00	16.47
122	3	20	28.00	19.21
121/21	1 & 1	20 & 2 Cir.	32.00	21.95

Nearly half a million old style hand wound models need those modern All Electric replacements.

515	1	15	16.95	11.64
521	1	20	18.50	12.70
522	3	20	21.75	14.92

These units made to fit in the old case without disturbing connections. Remove key rack—connect wires—you're through.

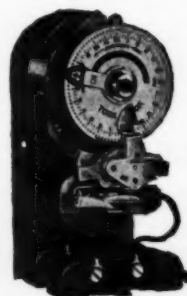
Return mail quotations on all sorts of special applications or industrial timers.

POSTPAID ANYWHERE IN THE U. S. A.

**THE TORK CLOCK COMPANY, Inc.**  
MOUNT VERNON NEW YORK

"The pioneers in time switch popularity"

LINOTYPE LEAD POTS • POULTRY HOUSES • CHURCH BULLETINS



HALL LIGHTS • AIR CONDITIONING • BURGLAR PROTECTION • COAL STOKERS

# Quality Products Give You a *Quality Price* .....

**Take Your Lighting  
Jobs Out of Price  
Competition By  
Using Benjamin  
Lighting Equipment**



## Benjamin "Heavy Duty" Vapor Proof Lighting Fixture

Listed as vapor proof by the Underwriters' Laboratories. Sealed construction. Designed for severe service. Easy to wire. In pendent and ceiling types.



These are but two of the many Benjamin lighting fixtures for both general and special lighting. Prestige for high efficiency, extreme ruggedness and reliability gain easy acceptance. Use Benjamin lighting fixtures in your Better Light-Better Sight activities. They will help you sell and make satisfied customers.



## Benjamin Turnlox ("Type 79") Glassteel Diffuser

For the finest kind of overhead general illumination, specify Benjamin Turnlox ("Type 79") Glassteel Diffuser. The reflector, bowl and lamp come down as a single unit for easy cleaning. With opal glass globe and, for color discrimination, with daylight glass globe.

This company endorses the principle of adequate compensation and protection for the electrical contractor.

BENJAMIN ELECTRIC MFG. CO., Des Plaines, Ill. New York, Chicago, San Francisco

# **BENJAMIN REFLECTORS**

FLOODLIGHTS . . . PANELBOARDS . . . FITTINGS . . . SIGNALS



## HERWIG

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LIGHTING FIXTURES

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200 Illustrations

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Be Sure to Send for  
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For  
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The Best and Safest Method is  
a properly installed KNOB and  
TUBE job. Be sure and get the

**Bull Dog**  
REGISTERED

Assembled Knob because it "HAS  
A GRIP LIKE ITS NAMESAKE."

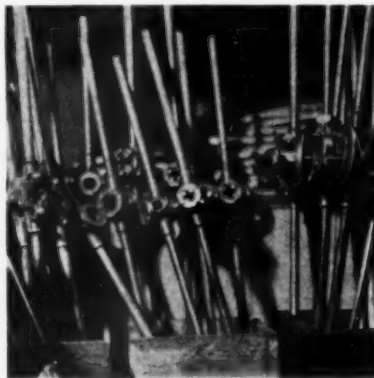
ILLINOIS ELECTRIC PORCELAIN CO.  
MACOMB, ILLINOIS



## PRACTICAL METHODS

## TOOL STORAGE

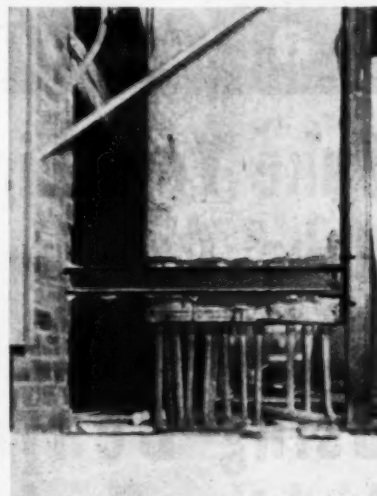
A simple non-skid storage method for stocks and dies is employed by Martien Electric Co., Cleveland, Ohio. Shallow wooden boxes and junk steel cabinets are set on floor, with stocks set endwise therein,



grouped in boxes as to size and type. Oil drippage is caught by these boxes thus protecting the floors. Breakage of valuable stock and die parts from skidding and falling to floor is held down, as well as having the tools easily accessible in separate groups. The large number of stocks and dies thus stored would have required more rack space than could be spared in this shop.

## CABINET SUPPORTS

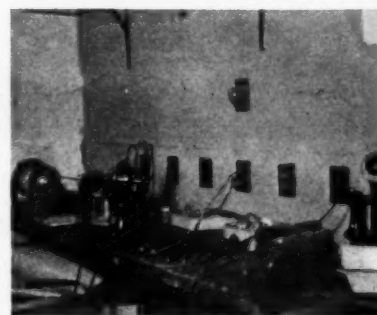
By pre-setting panelboard boxes before installing conduits in slab the job is then ready for complete runs of conduit into the distribution centers with a minimum possibility of pipe molestation. The Hatfield Electric Co., Cleveland, in wiring the Cleveland Post-Office Terminal, had numerous boxes located in inside partitions at right angles to main outside walls. For these locations 2 in. by 2 in. vertical angle iron supports were installed from floor steel to ceiling steel, with channel iron horizontal members interposed. In cases where cabinet was located close to a column or outside wall, only one vertical angle iron support was used, due to anchoring the opposite ends of horizontal members into brick work, or to steel frame of building. In addition to assuring a rigid condition of all home run conduits during concrete



pouring process and the elimination of bent-over stubbed conduits, the operation of nipping home run conduits into cabinets was also avoided.

REPAIR AND TEST BENCH FOR  
SMALL DEVICES

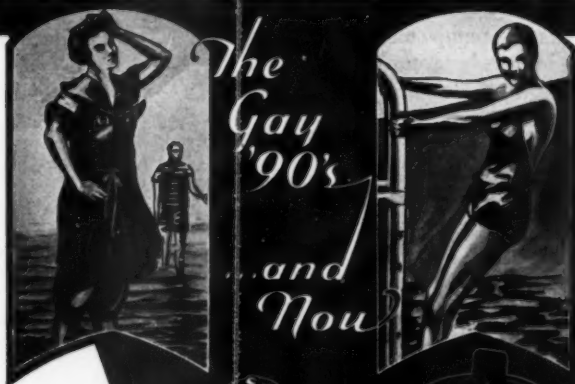
Small appliance and radio equipment repairs require a handy bench and testing facilities, which should also look neat to customers when invited into shop. Weber Electric Construction Co., Kansas City, Mo., made their bench 8 ft. long and 24 in. wide.



A 1/2 h.p. motor drives a grinder and buffer at left end while a 4 in. jaw vise is at right end of bench. Flush testing outlets with bakelite plates are provided in rear wall, reading from left to right: (1) Combination switch and receptacle for bench grinder-buffer motor; (2) radio outlet; (3) 220-volt receptacle; (4) series testing outlet with series pilot lamp receptacle directly above; (5) duplex 110-volt general purpose outlet; (6) combination receptacle and pilot for

# BRYANT SURFACE SWITCHES

TIME PROVEN DEPENDABILITY — — — TIMELY DESIGN



## "HOW STYLES DO CHANGE!"

So often we make this remark when amused by a comparison between former styles and present styles. Such a comparison serves as a reminder that change is inevitable—and with surface switches, necessary, to keep abreast of the modern trend. The modern note is strikingly evident in Bryant Surface Switch design.

But styles are only superficial. The underlying worth is what really counts,—be it with persons or Surface Switches. The underlying worth of a Surface Switch is its ability to stand up. This quality is constant in Bryant Surface Switches. The photographs of the old-time switches on this page were made from switches voluntarily returned by the users with statements of average service of over a quarter of a century.

SEE THE  
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BRYANT SURFACE  
SWITCH LINE  
IN  
THE NEW  
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FOR MODERN  
APPEARANCE  
AND LONG TIME  
SERVICE —

USE  
BRYANT  
SURFACE  
SWITCHES

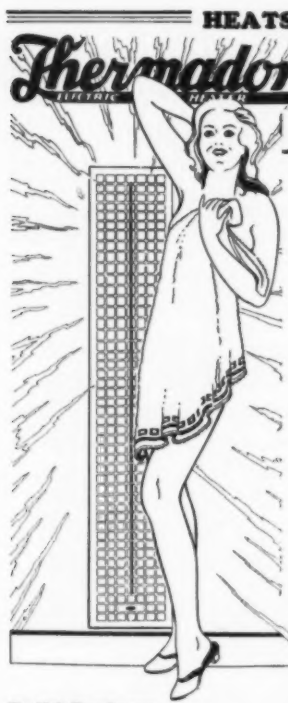


# BRYANT

*Superior Wiring Devices*  
Manufactured by THE BRYANT ELECTRIC CO., Bridgeport, Conn.

MANUFACTURERS OF "SUPERIOR WIRING DEVICES" SINCE 1888 . . . MANUFACTURERS OF HEMCO PRODUCTS  
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 116 Llewellyn St., Los Angeles, Calif.

## SHERMAN GROUND CLAMPS

### SL TYPE

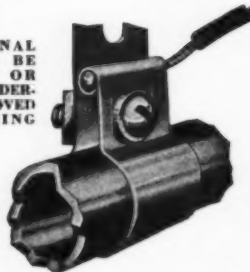
THE ONLY CLAMP  
 APPROVED FOR  
 USE EITHER  
 WITH OR WITH-  
 OUT SOLDERING



ALL  
 COPPER  
 ONE  
 PIECE  
 U. S. Patent  
 No. 1241898

### SOLDER TYPE

THE ORIGINAL  
 TYPE—CAN BE  
 USED WITH OR  
 WITHOUT SOLDER-  
 ING BUT APPROVED  
 FOR SOLDERING  
 ONLY.



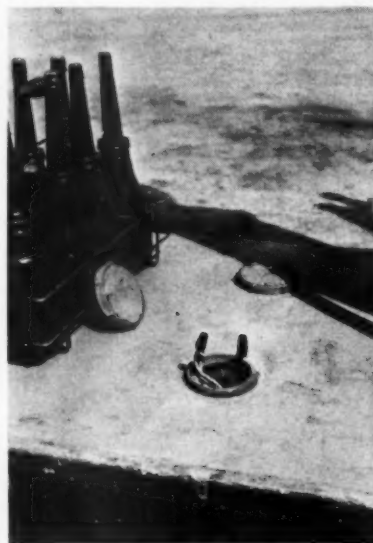
Send for litera-  
 ture—Buy from  
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**H. B. SHERMAN MFG. CO.**  
**BATTLE CREEK MICHIGAN**

soldering iron; (7 and 8) centered under telephone bell box (not in photograph) push buttons for ringing apartment at rear of shop or for ringing office.

### GAS STATION PUMP ISLAND JUNCTION BOX

Branch circuits to pump motors and lights are separately accessible for maintenance at special island floor junction boxes, under the methods employed by the Thiel Electric Co., Chicago, filling station wiring special-



ists. Home runs to panel from pump lights and island standards are run separately from pump motor circuits. Two junction boxes are installed in the top of the island concrete, usually between the first and second pumps nearest to the panelboard, from which point the pump and island standard conduits are run. Thus when trouble occurs on the outside underground wiring it is more convenient to work from these junction boxes to individual termination points than to disturb various connections or splices in intermediate crowded pump bases. The junction box used for this purpose is 4½ in. square of one piece drawn steel, equipped with a circular collar or hub opening about 3½ in. diameter, threaded on its outer rim to receive a screw-over cover. This box is roughed-in with the collar projecting sufficiently above the finished island concrete to permit the free installation or removal of the screw cover, and also to prevent water seepage into the box.

### GAS STATION YARD AND SIGN STANDARDS

Fluted pipe sections add an ornamental touch to filling station yard light, sign and floodlight standards. Thiel Electric Co., Chicago, found



enough demand for such material on this class of work to justify their purchasing several sizes of used boiler tubing and having a local shop provide the rolled-in flutings. Since this process eliminated the chance of using threaded reducer couplings for joining graduated sizes of standards, the lengths were welded together as desired for each specific design, thus assuring a rigid assembly, plus an attractive finished appearance, due to the absence of certain fittings.

### MOTOR DISPLAY BENCH

A rigid bench to hold small motors and which gives a maximum amount of space for storing heavier motors on the floor beneath may be made up with 1¼ in. pipe legs secured with floor flanges to 4 in. by 4 in. horizontal timbers. Legs are braced in pairs for bench cross sway by ½ in. pipes flattened at ends for bolting through top and bottom of legs. Thirty-six in. long ¾ in. boards provide sufficient strength for such motors as are set on top of bench. The length of bench may be varied in accordance with lengths of 4 in. by 4 in. horizontal timbers selected. Legs should be spaced about 42 in. apart to freely accommodate large motors on the floor. If motors are set on the floor upon 8 in. by 8 in. blocks they are always ready to receive an ad-



# These Points Will Help You Sell G-E Floodlights

**W**E believe that our copper-bronze enclosed floodlights are the best projectors built—that your customers, in paying the extra cost for enclosed floodlights, will save money. We have been manufacturing this line for seven years, and of the many thousand that have been sold, we know of none that has had to be replaced because of failure or depreciation.



**Pleasing appearance**—No other floodlights will come as near to selling themselves on appearance alone as will the Novalux copper-bronze projectors of General Electric. Their attractive business-like shape, and the enhancing value of copper give distinction to any type of structure.

**Ease of adjustment**—For most types of floodlighting it is necessary or desirable to throw the light exactly where it is needed. No floodlights are superior to these copper-bronze projectors in this respect. Accurate focusing, and a choice of several reflectors, door glasses, and lamps, give excellent control of light distribution.

**Ease of maintenance**—These copper-bronze units, with their tight-fitting, heat-resisting door glasses, and their water-tight cable entrance, are easy to maintain. The copper casing and the bronze supports will not deteriorate with weathering, even with salt spray. The silvered-glass reflector maintains its original efficiency indefinitely.

**Variety of types**—Three projectors are available, giving ratings from 250 to 1000 watts. Different types of door glasses, and colored door glasses or color plates to use with clear door glasses, give additional variety.

**Auxiliary equipment**—There is the same advantage to your customers in having all the material in their installations furnished by one manufacturer as there is in having it all installed by one electrical contractor. General Electric can furnish, in addition to the projectors, the poles, cable, conduit, switches, and time switches.

**Service**—We have prepared floodlighting layouts for many types of installations. These are yours for the asking. When complicated jobs arise, we shall be glad to assist you with them. To help you promote floodlighting, we have prepared many different publications, not only on the units, but on various applications as well. A letter to us will bring you these for any type of project.



To help you give your customers all information on floodlights, we have prepared a publication (GEA-1865) listing all G-E floodlighting equipment. Also, you may wish reprints of our advertisement (500-113) of last month, which pictures all G-E floodlights in their relative sizes and gives the list price and application of each. A card or letter to General Electric, Dept. 6C-201, Schenectady, N. Y., will bring these to you.

500-112

## GENERAL ELECTRIC

## MINERALLAC



Cable or Conduit Hanger



Jiffy Clip

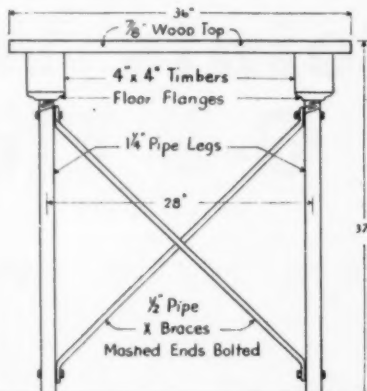


Statiscopes

Write for Literature

MINERALLAC ELECTRIC CO.  
25 No. Peoria Street, Chicago, Ill.

New York City Branch  
381 Fourth Avenue



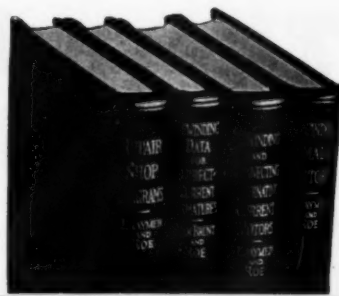
justable motor floor jack. Benches of this type in various widths and lengths are used by Briner Electric Co. St. Louis for displaying over 2,000 used motors.

### OUTDOOR TRANSFORMER RACK

A substantial yet flexible wall type supporting rack for smaller sizes of oil-filled transformers which permits ease of replacement in case of failure was installed by the Dearborn Electric Construction Co., Chicago, in a large distillery job. A rectangular frame consisting of vertical channel



irons and horizontal angle irons was secured with bolts through the building wall. The horizontal angle irons, by being bolted to outside face of channels provided a hanging rail over which flat iron transformer hanger straps were hooked. In replacing a defective transformer, a temporary unit can be hooked to the rack without the need for redrilling the rack to meet the mounting hole measurements of a different size or type of transformer.



## NOW—this ELECTRIC MOTOR REPAIR LIBRARY tells how to handle all kinds of profitable repair and re- winding jobs

### Do you know how to:

- lay out a wave winding
- test a.c. and d.c. motors to locate grounds, shorts, opens, quickly and positively
- properly record data when stripping armatures so that it will be instantly usable for correct rewinding by yourself or any experienced winder at any time afterward
- determine how many coils can safely be cut out
- lay out single-phase fan motor windings
- change single-phase windings for two- or three-phase operation
- make cross or equalizer connections on lap windings
- lay out frog-leg windings
- handle every step in a rewinding job from the time it comes into the shop until it leaves
- wind stators for turbo-generators
- band high-speed armatures
- rewind motors for voltage, speed, frequency, or cycle changes
- etc., etc., etc.

1,079 pages of practical shop methods and data on jobs like these in this library. A complete, modern key to repair of all motors. Nothing else in it; every page filled with definite, practical facts for the industrial maintenance man and the electric shop worker.

4 volumes, \$10.00, payable in  
easy monthly installments

THIS set of books should be on the shelf of every man who ever has to touch a motor for purposes of repairing it or changing it to meet different operating conditions. In shop language and with practical shop methods it covers every step in stripping, rewinding and connecting a.c. and d.c. motors of all kinds.

### How to change motors for different operating conditions

Here is all the information you need in order to determine what changes various types of motors permit; to lay out new windings for specified service conditions; and to handle every step in the work with satisfactory results.

Covers all types of motors, from those used in small household and commercial appliances of all kinds, to mining and railway motors. Explains principles underlying the different types of windings; gives definite instructions for doing the various rewinding jobs. Also gives many data, tables and diagrams constantly needed by the repair man, including data difficult to get from any other source.

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Contains 128 brushes for over 300 different types of single phase motors—all popular numbers in every day use.

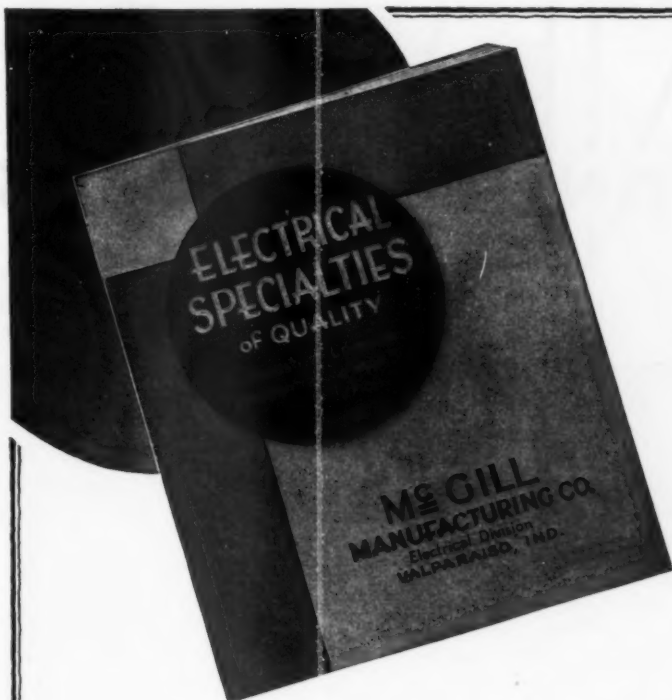
Send coupon for complete catalog and prices.

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# Know the Facts about McGill Products

The new McGill Catalog is up-to-date, concise, complete. It illustrates and describes many products you may be familiar with, as well as many new items recently added to our line of Electrical Specialties. McGill products are known for their high standard of quality, and long satisfactory service.

1. **Levolier Wiring Devices** — for industry, public buildings, and residences. The name Levolier has for years stood for real, super-value in individual light control — a compact, easy to install, reliable switch. A number of new items have been added to the Levolier Line.
2. **McGill Portable Lamp Guards** — there are many different models in this line of guards—and a wide price range for all types of customers. You will find a Guard to fit the needs of the factory, garage, store, or home. The line has been balanced up to today's requirements. It is worthy of your careful inspection.
3. **Loxon and Gripon Lamp Guards**—here again you will find a wide range of models, both plain and reflector type, for stationary and suspended installations. Real value is built into this line, and the use of these guards is a real investment — saving breakage and theft. The line has been improved where possible, and unnecessary models eliminated. There are many places where guards can be suggested.
4. **Miscellaneous Items**—Coloring Fluid, Soldering Flux, Lamp Changers, Cord Spools, Chatterton Compound — such items as these complete the McGill Line. All items you can stock and sell at a profit.

*A copy of this New Catalog will be mailed you soon.  
Kindly take the time to look it through carefully.*



**McGILL**  
MANUFACTURING CO.  
*Electrical Specialties of Quality*  
ESTABLISHED 1904  
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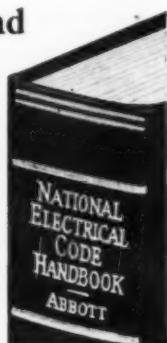


Box No. 670



## Simplifies and explains the National Electrical Code

New 2nd Edition covers latest code rules



Here is a complete revision of Abbott's useful Handbook, covering all changes, new rules, etc., in the latest National Electrical Code. Use this book to get work done according to the Code. Gives rules and requirements for all jobs—what they mean—how to apply them.

## National Electrical Code Handbook

by Arthur L. Abbott

Second edition, 520 pages, 5½x8, fully illustrated, \$3.00

THIS book enables the user to grasp readily the plan, scope and purpose of the National Electrical Code requirements. It presents discussions of the rules wherever this will clarify them, and makes the practical application of the rules clear and easily understandable. All requirements of the Code included; grouped according to subjects to which they apply. Enables you to refer to any point quickly with assurance that no rule applying to subject will be overlooked. Makes every Code rule clear and understandable. Gives comments, explanations, diagrams and sketches wherever needed. Restates rules where the meaning can be brought out more simply.

### Valuable data for the electrician, inspector, contractor and architect

- definitions of Code terms
- types of wiring approved under given conditions
- requirements for standard materials and apparatus and standard methods of installing them
- general requirements applying to all wiring systems
- simplified application of Code data pertaining to motor installations
- special requirements for outside work, hazardous locations, theatre wiring, emergency lighting, high-voltage installations, etc., etc.

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330 West 42nd Street, New York, N. Y.  
Send me Abbott's National Electrical Code Handbook for 10 days' examination, on approval. In 10 days I will send \$3.00 plus a few cents for postage, or return book postpaid. (We pay postage on orders accompanied by remittance.)

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# NEWS MANUFACTURERS

A DEPARTMENT FOR THE ANNOUNCEMENT OF ACTIVITIES OF MANUFACTURERS THAT ARE OF INTEREST TO CONTRACTORS, SUCH AS CHANGES IN EXECUTIVE PERSONNEL, BRANCH OFFICES, NEW PRODUCTS, ETC.

### BETTER CORD MOVEMENT SHOWS STEADY PROGRESS

"Electrical Inspection News," a 4-page newspaper circular replete with topics of interest to inspectors in the curbing of defective cord wiring, has been developed by Electrical Cord Manufacturers, New York City. The cooperative work of national and state-wide educational and commercial organizations in advocating "Better and safer electrical service in the home" is presented in selected news items, which detail the methods followed by these organizations.

A full page of example newspaper articles for submission to the press of the various communities contain the facts in lay terms. Four booklets have been prepared for the information of (1) the public "Safeguarding Electric Service in the Home"; (2) "For the Inspector"; (3) utility employees, "The Identified Cord Story and How to Tell It", and (4) the salesman, "The Identified Cord Movement". All booklets are available upon request.

James S. Mahan announces the establishment of an office at 201 No. Wells St., Chicago, Ill., for rendering his personal services to manufacturers in the presentation for approval of new products in the electrical, fire prevention and safety fields. The specific functions proposed by Mr. Mahan are (1) to secure the necessary forms and applications and to personally observe testing procedure of products submitted to Underwriters' Laboratories; (2) presentation of new products to inspectors' associations, rating bureaus

and municipal inspection and signal departments, national industry organizations and utilities, and (3) impartial electrical inspections and fire prevention surveys.

The Bryant Electric Co., Bridgeport, Conn., has just released its Catalog No. 34 entitled "Superior Wiring Devices." The catalog shows complete lines of sockets and receptacles, convenience outlets, caps and connectors, flush and surface switches, "Sentinel" breakers, interchangeable switches and outlet and pilot devices. The book is fully illustrated and is compiled in compact form, making it easy to handle.

A booklet containing answers to actual field questions pertaining to the problems encountered in gas filled tube sign manufacture and installation has been announced by Chicago Electrode Laboratories, Department A, St. Charles, Ill. This booklet entitled "Questions and Answers" by R. A. Warren, is available upon request to those manufacturing or installing Neon equipment.

Van Cleef Bros., Chicago, Ill., has just published a 4-page bulletin covering its Dutch Brand exhibit at The Century of Progress in Chicago.

### Classified Advertising

**Estimator:** Man with 18 years practical experience (10 years with the tools) and reputation for careful and accurate work wants position as estimator. Can make layouts and superintend job. Will go anywhere. Address Box 104 Electrical Contracting, 520 No. Michigan Ave., Chicago, Ill.



**. . . you get more features with F-M Motors**

Fairbanks-Morse pioneered many of the standards of the present day motor.

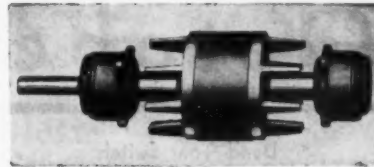
Today the pioneering still goes on—pioneering to create the standards of the industry of tomorrow. But F-M pioneering is an *exact* pioneering! It is a developed method of building motors better *mechanically*—building them better to serve you longer at lower maintenance expense.

These motors meet the most exact-

ing electrical specifications. But with characteristic thoroughness, Fairbanks-Morse has achieved a position of leadership in *mechanical* construction.

Fairbanks-Morse pioneered *mechanical* excellence in electric motors. It pioneered *ball bearings*, *grease tube lubrication*, *one-piece rotor construction*.

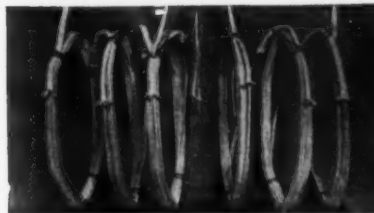
Pioneers in motor building progress, Fairbanks-Morse asks only an investigation of how much *more* these motors have to offer. Start your investigation by writing for full information. Address Fairbanks, Morse & Co., 900 S. Wabash Avenue, Chicago, Ill.



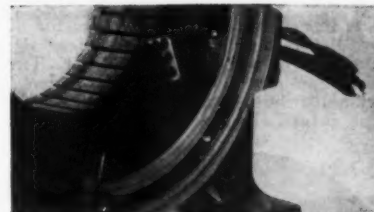
Complete rotor assembly with cartridge-type sealed ball bearings. Note rotor winding is of one-piece construction.



Lubricate sealed ball bearings once a year with tube-contained lubricant. Bearings, dust-tight. No lubrication drip.



Group wound coils—an entire phase group in a single piece of wire—lead connections from each group welded, not soldered or braced.



Sealed-in leads through frame opening—anchored permanently. No chance for strain on field leads.



Slot insulation — self locking by means of cuff construction — permanent and additional protection for field windings.



Final vibrometer test —one of a series to insure a smooth running motor with minimum vibration.

Pioneer  
Designers  
and  
Manufacturers  
of  
104 Years



# FAIRBANKS-MORSE MOTORS

POWER, PUMPING AND WEIGHING EQUIPMENT

8086 EA 40.63

# October New Products

## Dead-Front Switch

Trumbull Electric Manufacturing Co., Plainville, Conn., announces a "pull switch" type dead-front service entrance switch, catalog No. 2903. The switching to "on" and "off" positions is ac-



complished by the pulling, turning and reinserting of a fusible dead-front pull switch unit, with no possibility of touching live contacts, it is claimed. The device is made in 60 amp. size, 3-pole, solid neutral, for flush or surface mounting, with solder or solderless connections optional.

## Sign Reflector

A line of spade sign reflectors for 60 or 100-watt lamps is announced by Quadrangle Mfg. Co., Chicago, Ill. The design of reflector is claimed to give a wide distribution of light with a straight line cut-off at upper edge of sign, thus



permitting a wide spacing of reflectors with uniform illumination. Reflectors are of one piece, without seam, joint or weld to emit moisture, and are finished in porcelain enamel, green outside and white inside. An aluminum casting threaded for  $\frac{1}{2}$  in. pipe supports the reflector and the adjustable socket and fits under the heel of reflector, being secured in position by an aluminum clamping plate.

## Zip Type Lamp Cord

A lamp cord with a novel "zip" construction claimed to permit easy and safe opening of the sheath and separation of the conductors has been developed by the Wire Division of the U. S. Rubber Co., New York City, and is now available in commercial quantities. The trade name of the product is "Zipcord." The cord, consisting of two parallel con-



ductors, is rubber jacketed. Manufacturer claims that when the conductors are pulled apart, the rubber jacket divides evenly, assuring perfect insulation for each conductor. Zipcord, according to the manufacturer, is long wearing, extra flexible, neat appearing and does not fray.

## Window Reflector

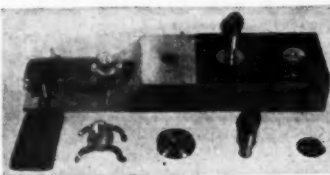
Adjustable window reflectors, No. C-14, for use with 60-watt to 150-watt lamps, but which do not require shade-holder or socket attachment supports are announced by Wilson Lighting, Inc.,



Chicago, Ill. The reflectors are made of polished spun aluminum and are equipped with spring tension clamps for attachment to the tip end of lamps after the neck of lamp has been inserted through reflector opening into a window socket or receptacle. Easy adjustment of reflector in various directions as well as automatic focusing to various lamp sizes is claimed, since the method of clamping the reflector to the lamp holds it in a correct focal position regardless of the lengths of the various lamp sizes employed.

## Prelocated Underfloor Outlets

Prelokaylets, a product designed to provide increased flexibility in the arrangement and greater accuracy in the location of outlets for fibre underfloor duct, have been announced as an addition to the line of fibreduct fittings listed



by General Electric Co., Merchandise Dept., Bridgeport, Conn. These devices are each provided with an adjustable nipple which is set approximately flush with the top of the concrete. Even though covered by linoleum, terrazzo or wood flooring, it is claimed that the position of the Prelokaylets may be quickly and conveniently located by means of one of two methods, both of which are simple and accurate. For small installations the Prelokaylets are usually furnished with brass caps containing a magnetic pin. This is located by a four-compass magnetic finder. For large jobs, steel caps are furnished which are located by a meter finder which is plugged into a 110-volt circuit. The outlets may be clamped on at any point along the line of duct, on the job, or may be set at the factory at any specified spacing.



## "Fire Eye" Detector

A thermostatic mercury tube contact "Fire Eye" detector is announced by the Holtzer-Cabot Electric Co., Boston, Mass. This unit is designed to sound an alarm when the temperature in the vicinity of the "Fire Eye" reaches 160 deg. F., and also to sound an alarm in the early stages of a fire that causes a sudden temperature rise of more than 20 deg. F. per minute. This latter feature is claimed to give added protection by virtue of minutes saved at the start of fire. The unit is available for open or closed circuit operation, and can be used singly in isolated locations, or can be connected with others as part of an extensive system, for local or remote alarm operations. The unit is completely enclosed, the contacts being hermetically sealed and permanently protected against corrosion or chattering. Attractive yet rugged and efficient, design is claimed for this device, being  $\frac{3}{4}$  in. in diameter and projecting only  $\frac{1}{4}$  in. from ceiling.

## Holder for 3-Light Lamp

A special lamp holder and 6 amp. 125-volt canopy switch designed for three-light Mazda lamps is announced by the Merchandise Department of General Electric Co., Bridgeport, Conn. The canopy switch is designed for single three-light lamp units, and is not intended for controlling multiple units, the latter being more conveniently wired to a wall switch. The holder and switch permit a choice of the three degrees of lighting intensity available from the filament construction of this lamp. Molded-on rubber plugs are furnished with cord sets for these lamp holders.

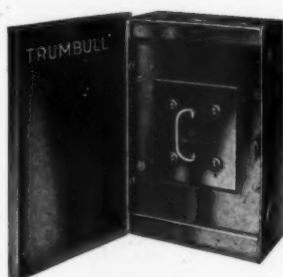
Electrical Contracting, October, 1934



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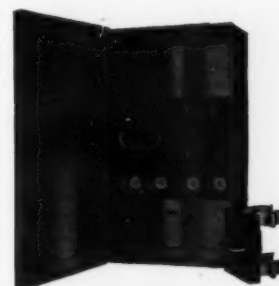


No. 2903  
Dead Front  
Entrance Switch

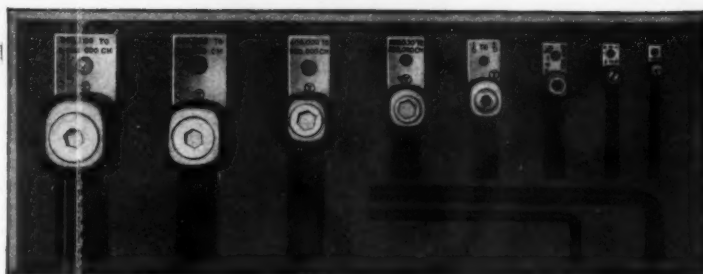


## THREE NEW ITEMS

Handi-Lug Solderless Connectors



No. 2924  
Dead Front  
Range Combination



• The three new items herein illustrated and described are but a small part of the Trumbull complete system of interior electrical distribution and control for wiring all classes of buildings—either factory or residential. Consider these items in your next wiring estimate.

### DEAD FRONT ENTRANCE SWITCH

• New dead front entrance switches surface type No. 2903 and flush type No. 2905 are approved for service equipment. Switch blades and fuse clips are attached to bakelite cover. When switch cover is removed the switch is open and fuses are dead and interchanged away from line contacts. Neutral terminal grounded on the box and all line terminals are covered by barriers. Refer new catalog page 87-B.

### DEAD FRONT RANGE COMBINATION

• New No. 2924 dead front range combination provides two 60 amp. dead front fusible switches for Main and Range circuits and four 30 amp. lighting circuits. Strap type solderless connectors which are entirely different from the Handi-Lug solderless connectors mentioned below are provided on main and range terminals. This switch is approved as service equipment and can be furnished for either surface or flush mounting. See catalog page 87-A for complete listings.

### HANDI-LUG SOLDERLESS CONNECTORS

• A radical improvement in the design of solderless connectors is a feature of the new Trumbull Handi-Lug. Eight Handi-Lugs comprise the entire line taking a range of wire sizes from No. 14 to 1,000,000 C.M. The adjustable feature is important. For example, a 200 amp. lug will take a range of wire sizes from 1/0 to 4/0. The simplicity of Handi-Lug design making it possible to use them over and over again and for different wire sizes is a decided feature. See page 153, Cat. 16, for listings.

**THE TRUMBULL ELECTRIC MFG. CO.**

**Plainville,**

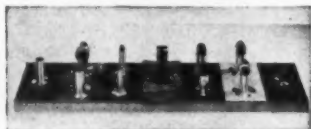
A GENERAL ELECTRIC ORGANIZATION

**Conn.**

# October New Products

## Underfloor Duct Outlets

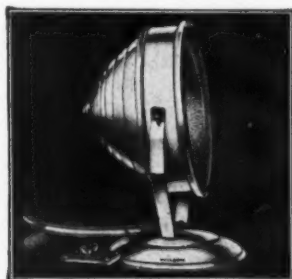
Designed to harmonize with the modern trend in office furnishings, a complete line of modernistic surface fittings or outlets for underfloor duct has been introduced by General Electric Co., Merchandise Department, Bridgeport, Conn.



This line includes duplex, two-pole, three-pole, twist-lock and polarity outlets. For telephone wires and cables, outlets are available in sizes from 1/2 in. to 1 1/2 in. A special flange for use with carpets is designed so that it may be easily installed, without injury to the fabric, merely by separating the nap.

## Indoor Floodlight

A portable totally enclosed indoor floodlight designed for 100 and 150-watt standard lamps or G-30 spot light lamps is announced by Wilson Lighting, Inc., Chicago, Ill. A stippled glass lens is em-



ployed to reduce glare and to increase the efficiency of unit by the exclusion of dust. A polished spun aluminum reflector, removable from the back for relamping, is claimed as an exclusive feature of this unit, which is known as their No. D-60. Complete equipment includes both portable and screw-down type bases, four color screens and holder and 6 ft. cord with attachment plugs.



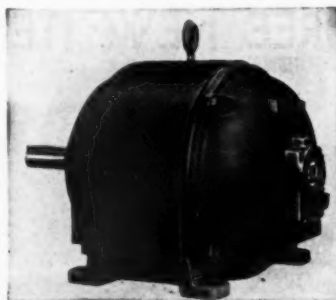
## Cellophaned Magnet Wire

The development of cellophane wrapped magnet wire called Celenamel is announced by Belden Manufacturing Co., Chicago, Ill. It is claimed to be a great space saver and to have increased dielectric strength at about the same cost as cotton covered enameled wire. Tests are reported to show approximately the same space factor as silk enameled wire, while in coils approximately 64 percent the volume of double cotton covered wire and 88 percent of single cotton covered enameled wire. Adhesive is first applied to wire, then the cellophane strip is wrapped in place and the assembly is then lacquered and baked. It is claimed

that this method of bonding insulation to wire prevents unwrapping of the covering when conductor is cut or when bent at sharp angles, and also protects the enamel insulation against heat and varnish solvents.

## Splash-Proof Motor

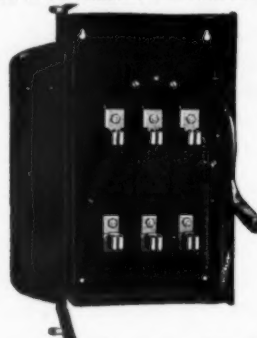
A splash-proof, drip-proof and weather-proof motor for indoor or outdoor use is announced by Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. A new design incorporating solid castings for motor frame and end brackets, with the case iron of thick cross-section is claimed to



offer high resistance to rust and corrosion, and to the sour gases encountered around refineries and other commercial chemical vapors. A baffle plate cast integral with inside of the motor bracket protects motor windings from splashing liquids. These motors offered in squirrel cage or wound rotor types at 50 deg. continuous rating, are available with either ball or sealed sleeve bearings.

## Type "A" Safety Switches

Square D Co., Detroit, Mich., announces the addition of 100-amp. and 200-amp. sizes to its 50,000 line of type "A" switches. This line is equipped with quick-make and quick-break feature, interlocked covers, double-break contacts with steel spring reinforcements assuring constant contact pressure, and elevated removable bases for easier wiring. Enclosures are available in standard sheet



metal, cast aluminum or with cast-iron optional, the cast types being weather-proof or dust-tight. The line now includes 230-volts a.c./250-volts d.c. and 575-volts a.c./600-volts d.c. in two or three poles, 3-wire solid neutral and 4-wire solid neutral, fusible and not fusible.

## Cylinder Design Fixture

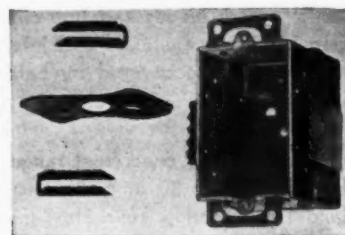
A modern cylindrical design wall fixture No. 520-A has been announced by the Herwig Company, Chicago, Ill. A 4 in. diameter by 9 in. long cylinder, available in cracked amber or opal glass is



standard equipment, while various glass sizes up to 6 in. by 22 in. are also made for this fixture. Cast iron, bronze or aluminum brackets may be obtained, all designed to accommodate a sign receptacle socket, which it is claimed may be quickly and easily installed and wired. This fixture was developed for use in residences, taverns and hotels.

## Old Work Box Hangers

Wall and ceiling outlet box hangers for old work claimed to provide easy and secure installation are announced by the General Electric Co., Merchandise Dept., Bridgeport, Conn. Wall hanger No. SP-6609 illustrated herewith is used for installing switch boxes in old work which involves plaster, wall-board or similar



construction. A hole is cut in wall the exact size of switch box, after which the switch box and hanger assembly is pushed into the opening until the sides of the hanger spring free on the inside wall. A bolt on the inside of switch box is then tightened, and the resultant inside and outside pressure against the wall is then claimed to set the box rigidly. For 3 1/2 in. diameter octagon outlet boxes, SP-6608 hanger has been developed. A hole is cut in wall or ceiling the size of box and the hanger straps are inserted, being held in place by offsets, after which hanger plate is mounted. All types of standard fixtures may be attached to this plate, it is claimed.

Electrical Contracting, October, 1934

# names

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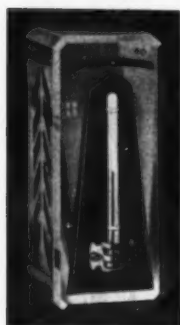


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### TRANSFORMER-RELAY

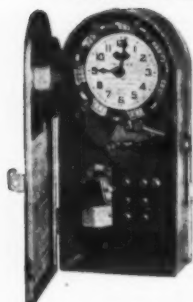


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For complete list of Mercoid Controls write for General Catalog No. G-28

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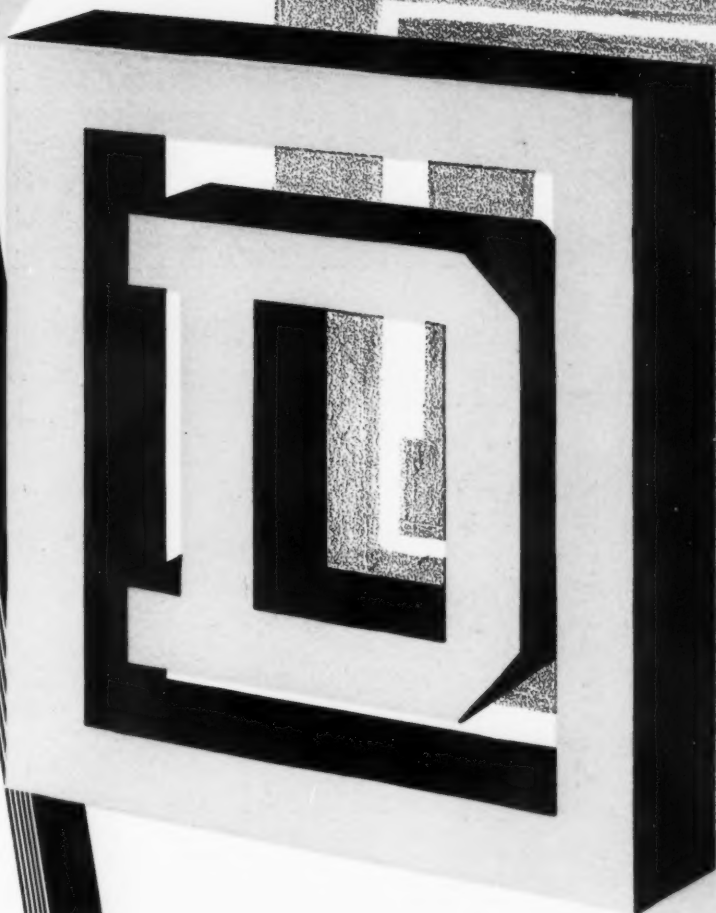
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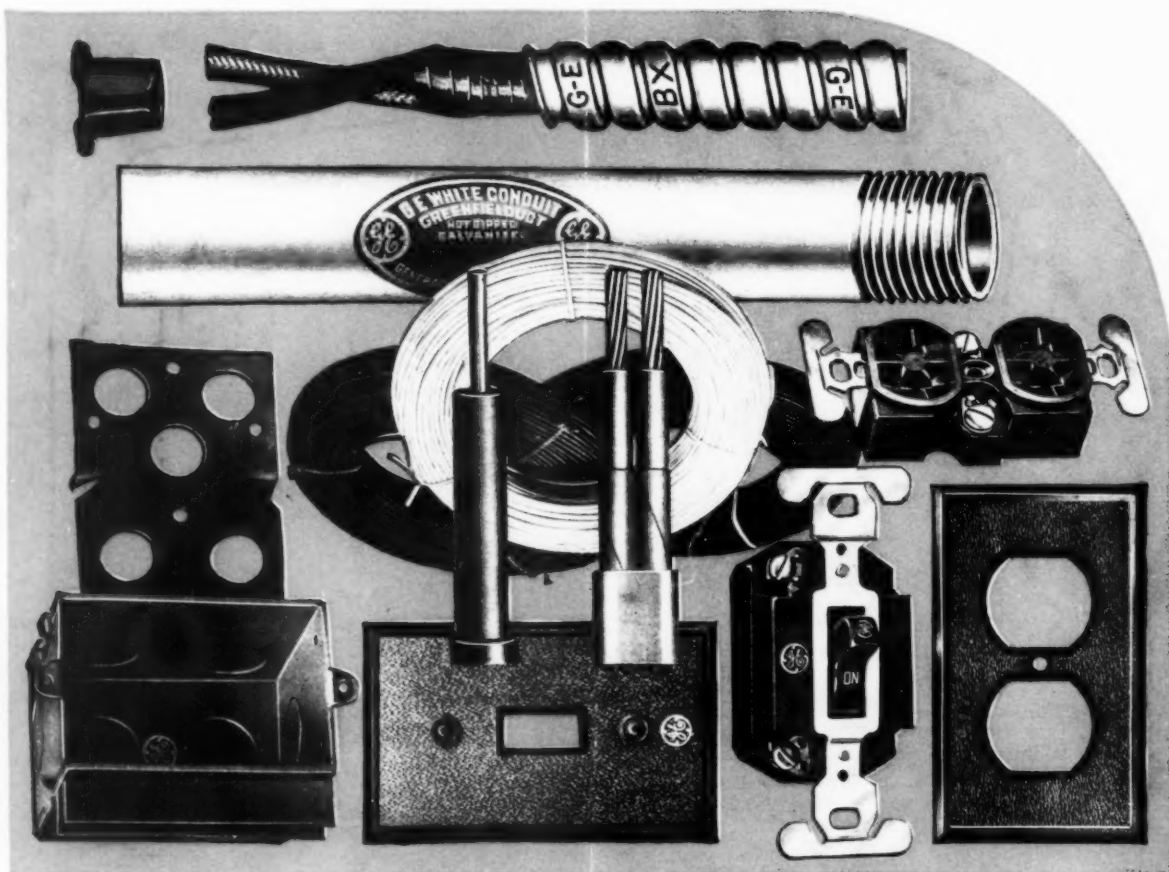


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